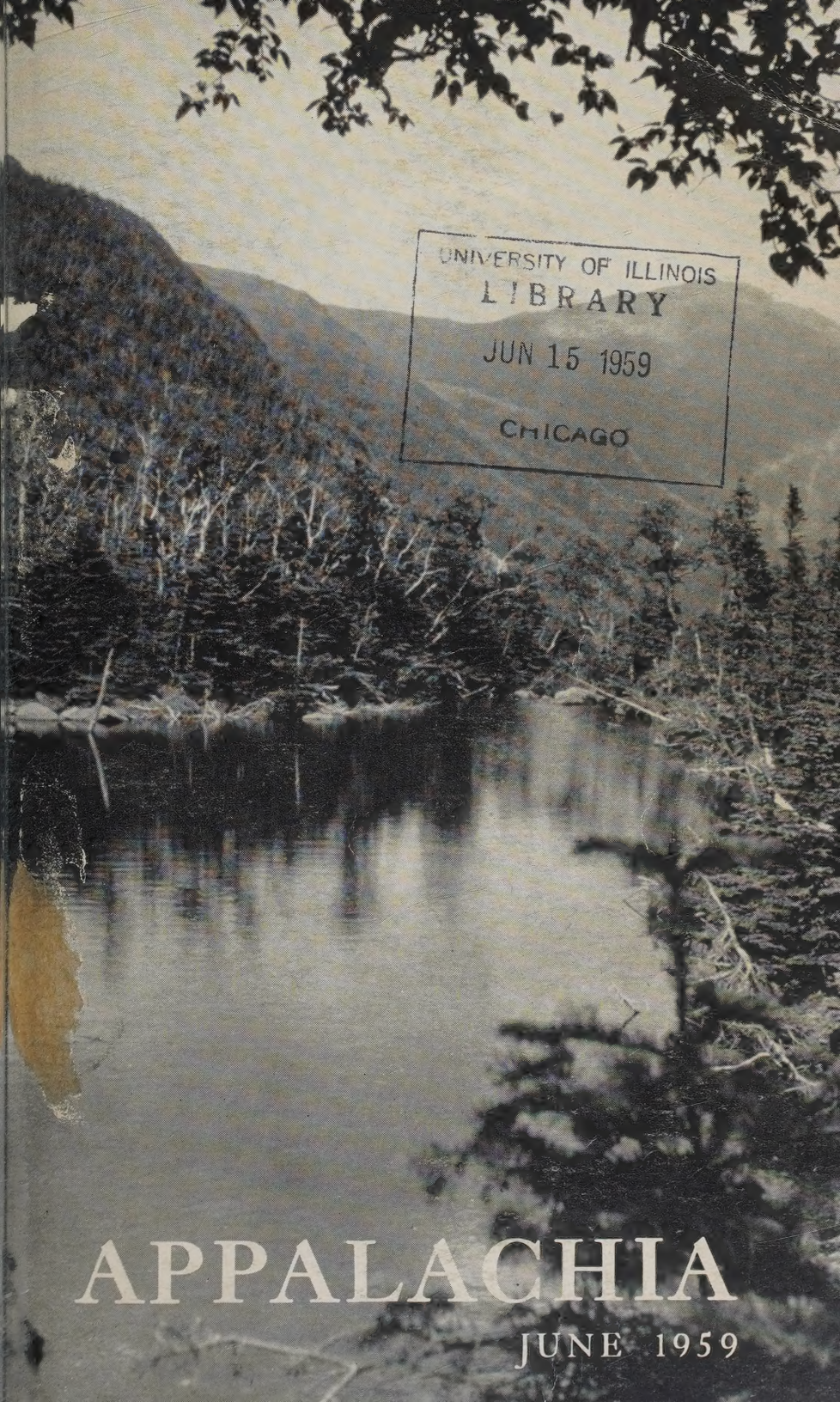

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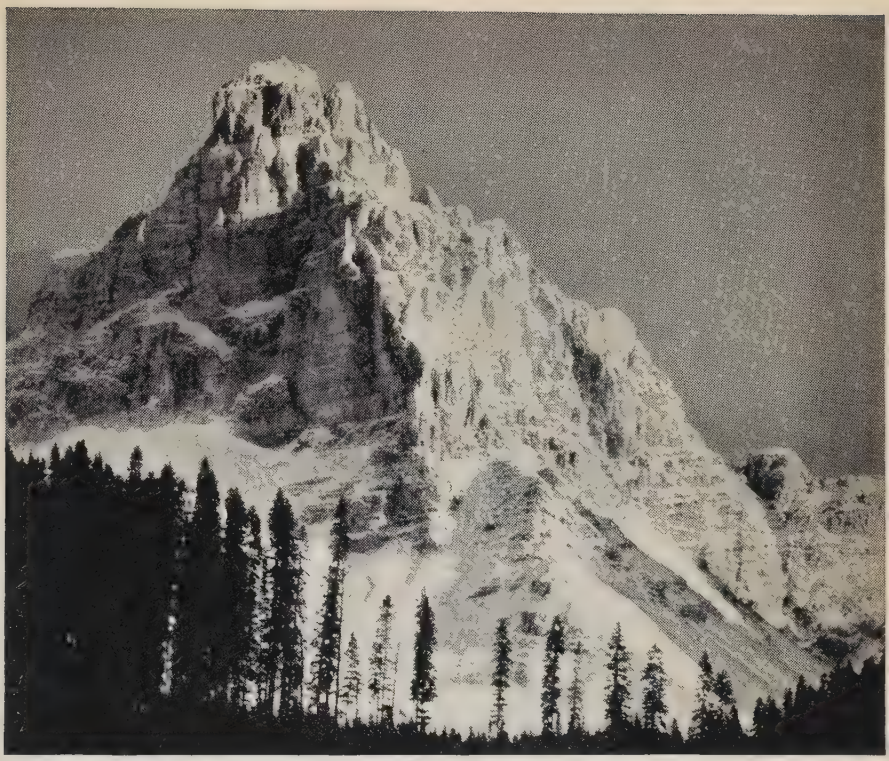

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APPALACHIA

APPALACHIA

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The map on page 428 is by Thorn Dickinson

Andrew J. Kauffman

CLIMBING FROM CAMP III TO CAMP IV

The Golden Throne in the Background

GASHERBRUM I

The following account of the great Gasherbrum climb of last July was contained in a personal letter from Andrew J. Kauffman, one of the two men to reach the summit, to William Lowell Putnam, a member of the APPALACHIA *Committee. Kauffman and Putnam are old climbing companions, many of whose exploits have been written up for* APPALACHIA *under the facetious title of "Colossal Enterprises"; the present article, says Bill, should be subtitled, "Colossal Enterprises Report from the Karakoram"! We are greatly indebted to him for putting at our disposal this story of the finest climb ever done by Americans, finely told by Andy Kauffman.*—ED.

September 25, 1958

Dear Bill:

You'll remember that this year is the tenth anniversary of our wonderful trip across the Northern Selkirks, where you, Ben, old Skagway and I wandered through the brush and over the mountains for three magnificent weeks. I wish I could have done something with you this year, but I think you'll agree, in the light of hindsight, that the better part of wisdom for the glory of Colossal Enterprises was for me to join the 1958 American Karakoram expedition to Hidden Peak.

I thought a lot about good old C.E. during the three months of toil, hardship and accomplishment in those magnificent surroundings. And, to some extent, it was what you once wrote that got us to the summit of the mountain, as well as Lionel Terray's final words to me just before our departure for Pakistan. For you had written that "in any great mountaineering accomplishment, there comes a time when you must be prepared to risk everything, even your life, to give it everything you've got, if you are to succeed". And Lionel had told me: "Don't stop, don't rest, but keep pushing, every day, in spite of wind, storm or snow, because in the Himalaya if you allow as much as a moment's repose, you will jeopardize your chances of success". In these two maxims we all believed, and only thanks to our practicing them did we achieve our victory on Hidden Peak.

As you know, Hidden Peak (which also goes under the name of Gasherbrum I) lies at the very heart of the huge Baltoro glacier system, in one of the remotest and naturally most hostile regions on earth. The mountain is 26,470 feet high; in the immediate area it is second only to K2. Until last summer it was one of the world's three peaks of over 8000 meters altitude which had never been scaled. It is not an easy mountain either, for it presents many of the same problems of distance as Nanga Parbat, with considerable technical problems on the lower slopes and many objective

dangers. But then, no Achttausender, not even Cho Oyu and Manaslu, can be considered easy. For the summit effort, even on easy ground, saps a man's energies to the limit, as we all learned.

Maybe I should start at the beginning, but instead I'll give you the climax. On July 5, at around 3.00 p.m., Pete Schoening, a veritable Hercules of a mountaineer, and I struggled up the last few feet to the top of Hidden Peak. We were at 26,470 feet above sea-level, the highest summit ever attained by an American party and probably the highest first ascent which Americans will ever make. Only one American, Fritz Wiessner, had ever climbed higher—a few miles away and nineteen years earlier—on K2. Fritz's magnificent effort on K2, I must say, had provided much of the inspiration which made it possible for us to get to the top of Hidden Peak, and I feel that, just as we owe many of our ideas to Lionel Terray, to you, and to so many others who know that you've got to push it if you are to succeed, so I feel that we owe Fritz equally as much. You don't get up these mountains unless you give them all you've got.

And your companions have got to give everything they have, too. In this respect Nick Clinch, who directed the expedition, picked a first-rate team which got along splendidly. To begin with, there was Nick; then Pete Schoening, the strongest mountaineer I have ever met, who quite properly was elected climbing leader. In addition we had Tom McCormack, Bob Swift, Tom Nevison (the expedition doctor, who turned out to be exceptionally good both as climber and companion), and myself. Dick Irvin and Gil Roberts were also members of the party, but unfortunately were unable to meet our schedule and first arrived in Base Camp on July 5, the day we reached the top. This was a pity, because with only six really experienced mountaineers we had a rough task of it on so great a mountain. But all of us except Nevison had had experience at altitudes of 20,000 feet or over, so we at least knew what to expect, more or less. Finally, we added two Pakistanis, Capt. Mohd Akram and Captain T. H. Rizvi, to the climbing team. Akram was a splendid fellow who unfortunately fell ill in Skardu on the way in and was not able to participate in the main assault, although he managed to visit Camp IV as we descended. Rizvi was an able and ambitious young army officer, whose services were extremely useful.

Unlike similar European undertakings, we had small financial resources and no professional climbers. Yet on a budget of about $30,000 (compared with $250,000 spent by the Italians in 1954 on K2) Nick managed to obtain new and, generally, excellent equipment for all of us. The figure includes expenditures for transportation of men and gear, as well as the expensive but, in our case, almost indispensable oxygen equipment. This item cost $3,000, and we used it in quantity only on the day of the summit

climb, but it eliminated the need for a much more extensive build-up, so that we were able to climb the mountain in three weeks from the time the attack began, instead of a probable six weeks. It provided us with a tremendous safety factor in that pneumonia is a great peril at high altitudes. I believe that there is no case on record of recovery from advanced pneumonia at altitudes of over 20,000 feet without the use of oxygen. The Swiss saved one man in this fashion in 1956. Personally, I was against oxygen at the outset, but today I doubt whether I would seriously contemplate another expedition to a peak over 25,000 feet high if we did not carry a small supply of it, at least for medical purposes. The best of this equipment is the open-circuit apparatus used by the French on Makalu and the Swiss on Everest, using the custom-made Gerzat bottles which contain 900 to 1,000 liters under 250 atmospheres pressure and which weigh about 12½ lbs. each.

We six Americans and the two Pakistanis flew in relays by C-47 over the dangerous route from Rawalpindi to Skardu on May 17 and 18. It is quite a trip, one which makes our little forays in 1946 in Alaska seem tame by comparison. You fly at 17,000 feet, which is about the ceiling for these old machines, and you have to clear several passes which are nearly that high. At the end of the run you enter the Indus canyon, where there is absolutely no chance of turning around if anything goes sour. And you have exactly one opportunity to approach the field at Skardu. If anything goes wrong you've had it.

We spent two days in Skardu, where we repacked three tons of supplies into 60-pound coolie loads. We hired 110 local coolies and retained six Baltis as high-altitude porters. Then we set out on the 140-mile march to Base Camp.

I think we covered the ground in record time for a major expedition. Fifteen days out of Skardu, with only one day of rest at Askole to revamp loads and hire 50 additional coolies to carry local food up the barren Baltoro for our regular bearers, we established temporary Base Camp at 16,100 feet near the point where the Baltoro becomes the Abruzzi Glacier. We had gained almost 9000 feet of elevation in the interim, often with great effort. The last two days we plowed through knee-deep snow with barefoot coolies trailing behind.

In the next few days we moved Base Camp closer to the mountain to a point at 17,100 feet. We now discharged the remaining coolies who had helped us in this task, and meanwhile Pete, Bob Swift and I engaged in a reconnaissance of the western approaches to the mountain, a side which was not well known.

Hidden Peak had been attempted twice before, once by a Swiss party in 1934, which tackled the southeast ridge but didn't get far because the expedition had other plans. In 1936 a full-scale French expedition, which included the finest mountaineers

of that day, was turned back at 22,000 feet by severe storm and technical difficulties. Since that time no one had approached the mountain.

Our reconnaissance took us up the South Gasherbrum Glacier —as crevassed a field of ice as I have ever seen. On one occasion, while we three traveled at well-spaced intervals, Pete stuck his foot in a crevasse. The entire surface on which we stood—and we were by no means all three on a single line, but rather in a sort of V-shaped formation—promptly slumped a few inches. Pete was 100 feet ahead of me, but it was a good 50 feet behind me that I heard the tinkle of icicles tumbling somewhere in the depths below, so we may well have been all three standing on a single, vast and not-too-stable bridge. On another occasion, when Pete fell to his waist in a crevasse, Bob, in trying to belay him, went to his knee in another one. And, as I drove in my axe, I stumbled to my hips into a third. Such incidents became commonplace later on. They served, however, to remind us that even the best alpinists must exercise the strictest prudence in such regions.

The route up the South Gasherbrum Glacier could certainly have been safeguarded, and the northwest ridge looked feasible and direct. But on further reconnaissance, this time up the southeast ridge (which had been attempted by the Swiss), some of us began to feel that this latter and rather roundabout approach would be best for our party. And so, after a week of reconnoitering, during which time we climbed to well over 20,000 feet, we turned our energies to the conquest of the southeast ridge.

This ridge by no means leads to the summit. It starts from the flats of the Abruzzi Glacier at 18,000 feet, some five miles above our base camp, and winds rapidly upwards to a huge snow plateau (the Urduk plateau) at about 22,000 feet. This plateau is somewhat reminiscent of Nanga Parbat above the Silbersattel. But Hidden Peak is still five miles away and 4500 feet higher.

For three weeks we worked on that ridge, relentlessly, in good weather and bad, slowly provisioning a series of high camps. We pitched Camp I, which became our advance base, at the foot of the ridge at 18,000 feet. The route to Camp II was laborious and steep, through deep snow much of which, under proper conditions, could have avalanched. And because there was no proper intermediate site, the vertical distance between Camps I and II was around 3000 feet, with the last 200 feet over very difficult terrain. In practice this pull proved to be the limit round-trip journey which sahibs or porters could endure in one day. Only two porters actually ever made the round-trip journey in a single day; usually they deposited their loads a little distance below Camp II and those of us who were above came down and hauled them the last few hundred feet. As for Camp II, it was situated on a

Andrew J. Kauffman

MASHERBRUM

From the Baltoro Glacier

Andrew J. Kauffman

CHOGOLISA FROM BASE CAMP

Hermann Buhl fell from a point on the skyline directly above the stick

narrow, exposed ridge, an uncomfortable spot, with a drop of about 3000 feet non-stop on either side of the two small tents.

It was at Camp II, where I spent a week almost without interruption during the struggle for Camp III, that Tom McCormack came down with what was nearly pneumonia. I escorted him down the 2000 feet of fixed ropes to Camp I, where Nevison ordered him to rest (which in this case meant relaying loads between Base Camp and Camp I, a task rendered arduous by deep snow and crevasses). It was also below Camp II (we usually climbed from I to II unroped to save time and effort, though the practice was not necessarily safe) that I was once caught in a violent though brief windstorm. I fought my way the last few hundred feet and crawled exhausted into the tent. For the next hour I melted snow for soup, but at the crucial moment Nevison arrived with Bob Swift and commandeered the hot water so that the latter might thaw his cold toes.

One week passed, during which we engineered the route to Camp III. If, to a large extent, I can claim responsibility for the effort that went into setting up Camp II, then credit should be given Pete Schoening for the fight he put up for Camp III. I had already chopped and cleared a short bit up the narrow and exposed snow-and-rock ridge above Camp II. But when Pete came up to join me, things really began to roll. One day Nevison, Schoening and I worked several hours in a snowstorm stamping out a relatively safe porter-route upwards and placing fixed ropes. At one point I began to feel the storm too severe to continue, but Pete was working up ahead and I didn't want to interrupt him. Besides, I considered Pete's judgment better than mine in these matters. But both Tom Nevison and I were beginning to feel the cold. Shortly thereafter I took over the lead for perhaps a hundred feet. After a half-hour's work, I heard Pete grumble something about going back to Camp II, complaining that somebody should have piped up long before this. But we had done good work and we warmed ourselves with soup and hot cocoa.

Next morning, leaving Nevison behind, Pete and I really pushed it to the top of the 21,400-foot snow dome where we hoped to find a good site for Camp III. The narrow ridge gave way to a small hanging glacier, then to a section where we chopped our way up some 200 feet of blue ice slightly below the dome. In many ways, this section between Camps II and III was the technical key to the climb. Far below us the Italian Gasherbrum IV party, who watched us with fieldglasses, expressed their surprise at the speed with which we moved, comparing it with normal Alpine climbing. Yet, to us, we seemed to advance very slowly, if at all.

It was now relatively clear that Pete and I would be the ones selected for the summit assault. We therefore returned to Camp

I for the only real day of rest we were to have during the assault. Nick, Bob, Rizvi, plus some of the porters, hauled loads from Camp II to III, thereby firmly establishing the new camp. Meanwhile Pete went down to Base Camp to haul up another load, and I made one more round trip with a porter to Camp II, in order to get a few more supplies up high.

To my great joy, Schoening now announced that we really ought to risk everything and make a fast dash for the top. I had long favored the tactics of rapidity if feasible, and I was delighted to find that secretly Pete shared my views. The route we had selected was a dangerous one, especially if the weather turned bad. The less time we spent on the mountain, I calculated, the less the chance of being caught by storm. This attitude is the exact opposite of the strategy of most Karakoram undertakings, which adhere to the principle of a massive build-up. Ours was, perhaps, not the wisest attitude. But we had a ten-day supply of food and plenty of oxygen at Camp III, and that oxygen gave our party a certain flexibility, a certain reserve and even mobility which it could not otherwise possess.

Pete and I now climbed back up to Camp II, this time in full battle dress, from eiderdown jackets and pants down to reindeer boots. We were followed by Nevison, Swift and McCormack who, though still weak, was putting up a big fight to stay in the game. Between Camps II and III Pete and I were caught in a snowstorm with a sick and abominably slow porter. When we reached the little hanging glacier below the snow dome, we could see nothing. Fortunately, we carried full equipment, including tent, sleeping-bags, stoves, pots and food. So we resorted to an old trick of Colossal Enterprises: we stamped out a platform on the nearest flat level, pitched the tent, ate a hearty meal and slept comfortably. Next morning, under better conditions, we covered the last few hundred feet up the fixed ropes to Camp III. A few hours later the rest of the gang came up from below.

Here in Camp III we had now virtually all the able-bodied personnel and some of the sick and ailing members of the party. And here too we made the fateful decision to move on and, if possible, climb the mountain within the next three days. We voted first to pick a summit team, and Pete and I were selected—unanimously except for our own votes, which were cast for others. I had known from the start that Pete would be a member of the summit team, but just why the others had to pick on me as his companion is not entirely clear. Anyway, I was flattered, in view of the sacrifices that the others had made. Nevison and Swift were equally strong, and McCormack would have been a fine candidate had his health permitted. We decided on a support party of Swift, Nevison and Rizvi, but the last reached his altitude ceiling shortly beyond Camp III and Nick Clinch replaced him.

On June 29 all the sahibs including Rizvi, plus three porters, were loaded up with 50 pounds of gear each and started along the ridge to the edge of the great Urduk plateau some 500 feet above us and perhaps a mile away. We had hoped to place Camp IV some distance up the plateau, but this was not to be. Deep snow and a more difficult route than anticipated slowed us considerably. Moreover, McCormack was forced in the aftermath of his pneumonia to drop out early on the march and his load was redistributed among the rest of us. At noon we reached an impasse on the ridge. We were obliged to descend a steep ice gully some 50 feet in order to reach the plateau. The upper part of the gully was overhanging. Despite a fixed rope and considerable coaxing, not one of the porters was ever persuaded to negotiate this barrier. It was also at this point that Rizvi told us he could not stand the altitude and must go down.

We lowered our packs down the gully and sent Rizvi and the porters back to Camp III. Then we five, headed by Nevison and Schoening, relayed loads from the base of the gully for about 200 yards up the glacier to a sheltered spot, where we pitched Camp IV. We were still at only 22,000 feet. The top of Hidden Peak was 4500 feet above us and five miles away.

For the next four days wind and snow reduced our activities, but we refused to remain in the tents. On the 30th Nevison, Swift and Clinch stamped a trail in knee-deep snow one mile up the Urduk plateau and placed willow wands. Meanwhile Pete and I relayed loads which the porters brought up from Camp III as far as the ice gully. We also consolidated camp. On the 1st we were pretty much stormbound, but in the afternoon Clinch and I again responded to the calls of two porters who brought additional supplies as far as the gully. And on July 2 all five of us hauled oxygen bottles to the previous high point reached on the 29th and established a cache. We were forever wading through knee-deep snow, for the track of two days before had been completely obliterated.

And then at last, that night, the weather turned cold and crystal clear, with an icy wind blowing down on us from Tazhikstan. Next morning all five of us saddled up with 50-pound loads and started up again. At the cache we added the oxygen bottles to our packs. From here on, whoever was leading was permitted to use oxygen at a 2-liter-per-minute rate, but those behind plowed along as best they could without this aid. The snow was deep and soft and we changed leads every fifteen minutes, with frequent rests. At last, around 3 p.m., after a seven-hour march, we could go no farther. We sat down wearily, between two gaping crevasses, and pitched the lone tent at about 23,500 feet. Nevison, Clinch and Swift shook hands with us and stumbled slowly back towards Camp IV. We watched them for a long time as they descended

for, though confident in our own powers, neither Pete nor I was absolutely sure whether we should be equal to the task ahead and, if anything went wrong, we knew that we should never get down alive.

That night we slept on oxygen for the first and last time during the trip. It was a refreshing sleep, which renewed our strength for the struggle on the following morning. At 3 a.m. we were up, ate a quick breakfast, struggled into our felt-lined reindeer boots, crawled outside and strapped on our crampons. We then lashed two full bottles of oxygen each onto our packboards, adjusted masks and regulators, roped up and set out.

It was to be a laborious, rough day, but the most rewarding of my life.

Although we wore a sort of improvised snowshoe which Pete had fashioned out of plywood from our equipment crates, we broke through to our knees at every step. And this continued all day, for fifteen hours, both on the way up and on the way down. In this fashion we waded uphill, at altitudes between 23,500 and 26,470 feet, three thousand feet upwards and for more than three miles—and back again. Despite the oxygen, which gave us tremendous benefit, the deep snow proved an almost insuperable obstacle. It took us four hours to fight our way to the 25,000-foot col immediately behind Camp V. And from here on there was no turning back.

At the col we increased our oxygen flow from 2 to 4 liters per minute. This action increased my own efficiency considerably, though Pete seemed in splendid form even at the 2-liter rate. We now alternated the lead every ten or fifteen minutes, working across a wide snow basin which still separated us from the southern slopes of the mountains. Then, for the next 1200 feet, we fought our way up steep snow and over rotten rock to the summit ridge. At one point, I suddenly could no longer follow Pete, though I still moved slowly upwards. Was I really on the verge of total exhaustion? I glanced down at my breathing-bag: it was empty. My first oxygen bottle was obviously exhausted. I switched to the second just as Pete, whose first bottle was likewise almost empty, did the same. We continued upwards.

The last hundred feet, along a steep and classically Alpine ridge of hard windblown snow, provided a pleasant contrast to the efforts we had undergone lower down. At 2.45 or thereabouts we removed our oxygen masks on the summit and stared around us. Only the sinister pyramid of K2 rose above us, but beneath our feet and between us and that great giant of mountains lay four of the world's mightiest peaks: Broad Peak, Gasherbrum II, Gasherbrum III and Gasherbrum IV. Across the way Chogolisa's pyramid rose in icy splendor. And far in the distance we could see the huge cliffs of Nanga Parbat, a sinister reminder that in

Andrew J. Kauffman

GASHERBRUM I

From the Base Camp

Andrew J. Kauffman

VIEW NORTHWEST FROM THE SUMMIT OF GASHERBRUM I

Gasherbrum IV, III and II, In the Background, Broad Peak and K2

the Himalaya and in the Karakoram man must not too often or too long defy the power of the gods.

For an hour we stood on the summit, laboriously taking photographs of the American and Pakistani flags and of the scene around us. The film in Pete's camera kept breaking, and it was almost impossible in the cold to replace it without risking frozen fingers. But with my camera I managed to obtain some good views. We also photographed the French flag in honor of our predecessors (we lost the Swiss flag at 25,000 feet and only picked it up on the way down), and we took pictures of the United Nations flag and that of Hungary. This last we had taken to the top of the mountain because we wanted to show that some Americans had not forgotten what the Hungarian people tried to do for the free world in 1956, and because we wanted a symbol of true heroism to spur us to our goal.

The trip back to Camp V was a slow nightmare in the gathering darkness, without oxygen and in a state of near exhaustion. We had had nothing to drink for fifteen hours. Our condition can best be portrayed by Pete's words to me when I tried to take a shortcut: "Don't leave the tracks, Andy, because I don't think we'll have the strength to get back to them if we leave them." A singular remark from so strong a climber as Pete. As for me, I was in much worse shape. Truly, on that day, in the fifteen hours to the summit and back, we had tapped our last reserves and had risked everything.

Nor was this true with us alone. When we finally started for the top, there were supplies for only two more days at Camp IV. And below virtually all the camps had been stripped to supply the assault teams. There were no sahibs between Camps I and IV; only two porters, strong, but of dubious judgment, at Camp III. One bad storm on the plateau and we could have been wiped out. Indeed, had the monsoon struck us, retreat from Camp IV or even Camp III would have been most difficult and dangerous, but then this would have been true no matter how lengthy and powerful our build-up.

Nor did we escape unscathed. Back in Camp I, twenty-four hours after reaching the top, I discovered my feet to be badly frostbitten. Fortunately, Nevison's skill and care saved them from amputation. But it was a close call. And although our appetites had been good and the food adequate, we all lost from 20 to 30 pounds while on the mountain, a little more than one pound for every day of climbing.

But we learned several lessons, the chief of which seems to be that you cannot accomplish great feats on high mountains without risk, and that disaster can strike any party, even the best. We were lucky—but, to be sure, we worked like slaves. Had we not done so, we should have failed, for one cannot go high in the

Karakoram without great, stubborn and persistent effort. And finally, Nick Clinch, over my opposition at the time but, I now think, with the greatest wisdom, decided to make use of the latest and most modern techniques employed so successfully by European alpinists in recent years. Although we used oxygen essentially on only one day, its presence speeded our ascent by a week or ten days; it could have made the difference between success and catastrophe. And, had it not been for abominably soft snow conditions, it would have transformed a high-altitude nightmare into an almost pleasant summit climb in the classic Alpine tradition. Our butane stoves were a vast improvement over the anachronistic gasoline equipment to which American mountaineers still cling. Our climbing tactics contributed much to our success, with every man carrying heavy loads, with camps spread far apart, and with the premise of speed and mobility as a corollary of safety. True, our methods were neither conventional nor traditional. Instead, we adopted what seemed to us to represent the best in tradition and to modify it with our own ideas. Much can be said for and against these ideas, but the fact will always remain that, under the circumstances, they worked. And as Nick Clinch pointed out when, after we descended from the mountain, some of us continued to argue that the northwest ridge was a better route than the one we finally selected, you simply cannot argue with success.

Well, Bill, it was a rough trip, but for me it was the greatest adventure of my life. As I look back, I think we are all lucky to be alive and well. But then I also think that, no matter what methods are used, any party that tries for an Achttausender and comes out as nicely as we did is lucky. These mountains are not playthings: they combine the vastness of Alaska with the difficulties of the Andes and, what's more, they're a lot higher. As Pete Schoening once remarked, in what I consider a classic example of understatement, "You know, after all, these mountains here are kinda dangerous".

It was good to hear your voice the other day. Give my regards to everyone.

ANDY

SKETCHES FROM THE NORTH COUNTRY

by Arthur Stanley Pease

Fourth Lake

Our names for the liquid features of the landscape—lakes, ponds and rivers—at times tend to be more indigenous as well as more romantic and euphonious than those of our towns, because more often retaining sonorous Indian titles for places to which their birch-bark canoes once penetrated, while the names of our towns merely reveal the early settlers' unoriginal imitation of Old World lands and cities, or else flatter the pride of local magnates by enriching them with a "-ville" or a "-ton". Contrast, in the state of Maine, China, Norway, Sweden, Denmark, Poland, Rome, Paris, Berlin, Moscow, Madrid, Vienna and Athens, on the one hand, or Jonesport, Brooksville, Otisfield, Codyville, Buckfield, Bucksport, Vassalboro, Thomaston and Sangerville, or the array of virtuous ambitions represented by Unity, Concord, Freedom, Friendship, Liberty and Hope, with the rolling syllables of Mattamiscontis, Welakenabacook, Kennebec, Cupsuptic, Passamaquoddy (how shoddy seems its clipped form Quoddy!), Androscoggin and Damariscotta, or—outside the area of Maine—with the sentiment of Father of Waters or Smile of the Great Spirit.

Lakes and ponds, however, still too often suffer from trite epithets, such as long, round, square, spectacle, mud, big or little —note the felicitously named Little Big Wood Lake in Maine. Occasionally, usually by sentimentalists or real estate developers catering to such, Mud Pond in Vermont is rechristened as Lake Abenaki, or North Andover Pond in Massachusetts as Lake Cochichewick; yet, as with some marriageable ladies, time and patience may be needed for change of name. And in the country are not even married ladies still often known by their maiden names, particularly when those are well established by years of use? So with ponds.

Among unimaginative names for series of lakes, numerals take

Arthur Stanley Pease, a life member of the Club and sometime Vice-President, has been professor of classics at the University of Illinois, at Amherst College, at Harvard and at Radcliffe, likewise President of Amherst from 1927 to 1932. He is at present Pope Professor of Latin, Emeritus, at Harvard University. Second only to his professional attainments are his achievements as an amateur botanist, in the prosecution of which interest he has made many trips in the United States, Canada and elsewhere. For a great many years Professor Pease has spent much of his summers in Randolph, N. H., from which as a center he has explored the White Mountains and their neighbors with remarkable thoroughness. A volume of sketches similar to those here presented has been published by the Harvard University Press under the title, *Sequestered Vales of Life;* while his *Vascular Flora of Coös County* is the recognized authority in its field.

first place, usually applied in the order of descending waters, First Lake being highest in the system. At the sources of the Connecticut River, however, as in a few cases in Maine, this order is reversed, perhaps because the lower and more accessible lakes were first explored and colonized and the upper, less economically important ones, were relatively less known afterthoughts. At any rate, until a few years ago, probably twenty persons had visited Second Lake for one who had seen Third, or for one-tenth of a person who had penetrated to Fourth Lake.

Yet just as the motive for climbing Mt. Everest arises "because it is there", so the existence of this remote lakelet seemed to constitute a legitimate challenge, and the building of an easy highway from Second Lake, past Third, and over the border to the foreign land of Chartierville and La Patrie, provided a means of more ready approach. That one should follow the international boundary for some distance seemed to be agreed among those who know *(coloro che sanno),* but the wide swath along that boundary had so grown up to trees and bushes that my attempts to follow it were long postponed. Yet every few years, by joint action of the adjacent Great Powers, the bound is cleared, and as soon as I found that this had just been done, I retained a learned and reliable classmate, G. Harvey Hull, Esq., to accompany me as legal counsel, in case any imprudent act of mine should infringe upon the laws of nations.

The Canadian boundary follows the crest of the Boundary Mountains, and what a rough time those who first surveyed it must have had! No wonder that it was long under dispute, and that a so-called "Boundary War" was waged, and, on the principle of "a plague on both your houses", that the independent Republic of Indian Stream was established and for about three years maintained as a buffer state. But the Ashburton Treaty settled all that, and now the vigorous boundary swath—the Romans might have called it a *pomerium*—wriggles along the height of land, with a bronze marker set in the ground at each change of direction (and there are many). A half-mile from the United States custom house, at marker No. 484-14, we left the guidance of the cleared bound and struck through the woods a few pathless rods into a little hollow which, we suspected and found, drained into Fourth Lake. The tarn itself, which, by advice of my legal friend, I estimated to be about eighty yards long, lies in a little cup in the woods, and is in shape long and narrow, surrounded by a floating and quaking bog, upon which one may safely walk, though not dryshod, and with black, mucky quagmires occasionally interrupting, upon which no one who values his life should penetrate. At one side an old beaver-dam shows that those tireless surveyors and able hydraulic engineers have not forgotten this remote spot.

The Connecticut Valley has often prided itself upon its varied manufactures; here was a water with none but the beavers attempting to exploit it. The valley has often boasted of its educational and cultural institutions; here was not so much as a kindergarten, unless it be that the chipmunks instruct their young here and the loons give evening musicales. Guidebook and oral tradition describe this lakelet as a dirty puddle, and so, I suppose, to many it may be. Yet somehow there was, for me, something about this lonely pool near the confines of two distinct civilizations, of French Canada and pioneering New England, which stirred the emotions of one born and for a dozen years resident in the lower Connecticut Valley.

And if men journey to the Tear of the Clouds to see the source of the Hudson, and to Lake Itasca for that of the Mississippi, to Donaueschingen for the outgush of the Danube, or the Vene del Tevere for that of the Tiber, why may not a select few of us thrill at the recondite birthwaters of our Connecticut?

Dawn

The boast of Chamaeleon of Pontus that he had never seen the sun either rise or set, though he considered it a testimony to his wealth and luxury, was rightly held by most ancient writers to show that he was really missing two of the great experiences of life. As we are told that the greatest profusion of animal types is to be found between the limits of high and low tides, i.e., where dry and wet meet, so it is the experience of some that our most varied fruitfulness in ideas lies near the confines of sleeping and waking, when we temper the unrestrained exuberance of dreams —which the ancients considered most veracious when occurring after midnight—with the critical judgment of fresh, unwearied, awaking minds, for one of the misfortunes of advancing age, according to John Buchan, is that you get out of touch with the sunrise.

The stages of dawn are several, even as those of sunset. Before any appreciable glimmer of light in the sky comes that sense of dewiness which, at the slightest spark of light, becomes beautifully and strangely glistening, as in Räuber's fine painting in the Munich gallery, depicting the appearance of the stag to St. Hubert. Then comes the dull whitish hue of the sky—the French *aube,* derived from the Latin *alba*—when one knows not as yet whether grey cloud or intense azure is to ensue. If the latter, then we may soon see around the horizon the apricot-colored hue so characteristic in the Japanese pictures of Hokusai and others, and which Coventry Patmore finds at sunset: "To see the peach-bloom come in evening skies". Now is the time to sally forth, if we would brush "with hasty steps the dews away, to meet the sun upon an upland lawn", and now, as apricot turns to

orange or pink, we understand the appropriateness of Homer's "rosy-fingered dawn", when Aurora, as Virgil says, leaves the saffron couch of Tithonus. "A person", says Ruskin, "who has never seen the rose-color of the rays of dawn crossing a blue mountain twelve or fifteen miles away, can hardly be said to know what tenderness in color means at all." As morning "flatters the mountain tops with sovran eye", we realize with Philostratus that mountains are made by the Creator as worthier than the plains, since the sun greets them first and leaves them his last salutation. But if, like poor Dido on her high watchtower, we merely observe the oncoming of light, how beautiful to see against the reddening east the dark forms of roofs, domes, towers and spires! In fact, one might almost welcome the presence of a few Moslems, if in return we might descry the slender outlines of their minarets rising skyward and turning ever lighter in color as the moment of the red sun's appearance is at hand.

Antiquity seems usually to have preferred dawn to sunset, the birth of a bright new day to the pensive setting of the sun, day's decline and death suggesting by a melancholy analogy the termination of the life of the human observer. Accordingly, while the West and its gloom were assigned as the dwelling-place of departed spirits, the East, among both Greeks and Hebrews, was associated with the residence of deity, toward whom prayers were directed and churches oriented.

"There are times when a master should rise while it is still night; for this helps to make a man healthy, wealthy and wise." Thus the Aristotelian *Oeconomica,* and the Younger Pliny records that his uncle used to call upon the Emperor Vespasian before daylight, since they both used the early morning hours for work and study. That may seem an extreme misuse of good principle, yet surely the self-imposed daylight-saving still found in the country might, with profit to all save the commercialized amusements, be extended to city-dwellers as well, so that they, like the farmers, might enjoy "the beauties of holiness from the womb of the morning".

Mr. Cook

Of what heterogeneous elements are the principal life-interests of some of us composed! For example, of Eugene Beauharnais Cook, son of a friend of President Martin Van Buren, himself a graduate of Princeton College and a gentleman of leisure, at a period when that title was a distinction rather than a reproach. One of his sisters, Madam Pychowska, was so named after she had married a Pole—a Polish count, some said, but it should be noted that, for New England country-folk, Poles are usually either peasants, working on hands and knees in the onion and tobacco fields of the Connecticut Valley, or else counts, with little

provision for any degree between. This sister's daughter finally entered a convent; another sister continued a spinster, and in her summer rambles gathered and painted the wildflowers of the White Mountains. Mr. Cook himself, who had in his earlier days led his sisters and niece on exploring trips to pathless peaks, survived the rest of his kin, and continued to occupy the stately house of his boyhood in Hoboken long after its immediate surroundings might to others have seemed uncongenial. It was there that during the long winter season he occupied himself with the profession of chess, publishing a volume of solitaire problems entitled, with his customary punning conceit, *Chess-nuts*. One day, while he was engaged on a chess problem, on a special table inlaid with a chess-board on its top, he heard his two maids pass the open door of his study just as one, who had recently entered his service, said to her older, more experienced colleague, "Sure, and does he play with toys yet?" The culmination of this interest was a large and valuable library of works on chess, bequeathed by him to his Alma Mater.

At some time in his life Mr. Cook had been a fancy skater, and though my acquaintance with him was limited to the summer months, I can well recall more than one occasion when, to entertain some children, he tied his long legs completely into a knot and propelled himself along the floor on his hands.

To chess and skating may be added the violin (in his case more properly called the fiddle), and though he never attained sufficient skill with this instrument to bring delight to anyone save two or three of his most devoted friends, he never ceased practicing, and each summer night after supper might be seen leaving the hotel, accompanied by his friend Mrs. Beckwith and her daughter, to spend the evening at the Randolph Town Hall, which they hired for all evenings not otherwise preempted, and where the Beckwith ladies played duets upon the piano, while he accompanied them with the fiddle. As he set forth for these evening revels, those unfamiliar with his habits were often diverted by observing his lanky, loose-jointed legs, his bushy eyebrows, heavy burnsides, battered felt hat, the lantern in his hand, and over his shoulders a knitted shawl with the orange and black colors of Princeton. Sometimes he also carried over the shoulder an axe or an umbrella, according to the prognosis of the evening, the former as a sort of coat-of-arms symbolizing his chief summer activity.

To chess, skating and music add now his primary summer interest in mountain climbing and particularly in the spotting of trails to summits, ponds, waterfalls, caverns, choice views or other noteworthy points. All this necessitated preliminary exploration, blazing, and a mild amount of chopping, though he seldom chopped a tree when it was at all possible to go around it.

Trails thus made had to be marked with signs and the distances measured and reckoned. Others might do this measuring with a bicycle wheel and cyclometer, but Mr. Cook with a chain or a measuring-tape, and he prided himself upon the precision of his performance, as when, for instance, he labeled one distance as "2⅜ miles, less 3 feet"—a statement in which his pride in mensuration seems to have prevailed over his scientific knowledge of the principle of the margin of error. Trails scouted, blazed, cut, measured and signed, had then to be walked upon, and here he was supported by the ladies of his family, Madam Pychowska giving advice, both orally and in published articles, about the forms of short skirts and bloomers then considered as properly combining modesty and mobility—and Madam Pychowska, mind you, had no intention of being estopped from visiting those rough mountain ravines which one of the guidebooks of the 1880's described as unsuitable places for "delicately nurtured females". The other sister, Miss Edith Cook, could be counted upon to fill out the party and attend to its botanical responsibilities.

Trails do not stay put, but twigs, limbs and whole trees are broken down by the weight of winter snows, if not felled by occasional hurricanes, hence the widening circle of Mr. Cook's paths demanded constantly increasing labor in upkeep, which he and his ladies, aided by an occasional masculine axeman, had to furnish, if the work of his hands was not quickly to revert to its original state.

Another great life-interest of Mr. Cook was the production and dissemination of puns, an activity in which neither any Englishman nor, among Americans, James Russell Lowell himself, could —quantitatively, at least—have surpassed him. Puns pungent and puns puny, he cared little, so long as every paragraph, nay, every sentence, was peppered with them. Most were, on any accepted standard of measurement, very feeble, though now and then he would soar a little higher, as when he described some very faint and unsatisfactory acetylene lights recently installed in the Ravine House as "a set o' lean lights". Yet over the feeblest of these products of his intellect he would chuckle as happily as Pythagoras might have done over the famous geometric proposition ascribed to him.

Amid these varied and unrelated interests, then, of mountains, trails, skating, music, chess and puns, Mr. Cook led a celibate yet by no means unhappy life, retaining much of the litheness of his youth, and reigning in his ivory tower at Hoboken till his death in 1915 at the age of eighty-five.

Talus

Almost every steep cliff, unless its base is constantly scoured by ocean waves, is likely to appear somewhat "down at the heel", with quantities of detritus, larger and smaller, which frosts, water, wind, or other erosive forces have knocked from its surface and piled at its foot. The steepness of these talus slopes or screes, up to a maximum of about thirty-five degrees, depends upon the "angle of repose"—a gracious term applied to the rocks themselves rather than to the explorer who scrambles over them. Though the sociology of the rocks has perhaps not been as much developed as that of human beings or the ecology of the lower animals and the plants, yet the most casual observer may see that the larger fragments, falling with greater momentum, race to the bottom of the heap, while the masses of gravel and all the smaller elements, by shorter journeys, are concentrated at its top. If water drips over the cliffs, the tiny fellows at the top of the talus are the first to receive it and often absorb it all, so that little or none is left in the interstices of the big rocks at the bottom, and this fact, added to the more finely divided character of the upper gravels, furnishes at the very top of the slope an attractive habitat for delicate herbaceous plants, while the larger rocks below are left to the hardier climbers, like bittersweet, climbing buckwheat and poison ivy, or to a few species like corydalis which can exist in what little and shallow soil lodges upon a few flat-topped boulders. All these talus plants, however, are fairly safe in their well-nigh impregnable haunts, for Nature has carefully protected her rarer blossoms by compelling those who pluck them to struggle over treacherous rocks and through toilsome thickets of entangling vines, poison ivy, and often also an abatis of downward-pointing tree trunks. If in doubt of this, try scrambling up against these obstacles, as at the foot of the great cliff at Willoughby Lake or on many a steep slope in Gaspé. Sometimes, if the gravel or the pencil-like fragments of slate are dry (and hence not closely packed), one finds himself slipping back two feet for every three he advances, and his shoes filled with angular and painful splinters. One who persists, however, against all these hazards is eventually rewarded at the top of the talus, where he can often walk more easily along the base of the cliff itself, amid the society of frail and delicate flowers, such as harebells, and sometimes of rare and highly localized species which, when forests covered the land, found in these open, unshaded, and sometimes moist slopes one of the few situations fitted for their perpetuation. Seen from below, a talus slope usually looks raw, unfinished and forbidding, but at its top is often unexpectedly gay and charming. So cleverly does Nature protect her choicest treasures from us trespassers upon her domain, whether we be botanists, geologists or mere sightseers.

Joe Fortin

Before the building of the modern highway around the Gaspé Peninsula the old road was passable for automobiles but a little farther east than Ste. Anne des Monts, and when I first tried to drive in a Ford car as far as that I obtained as my companion my friend, Merritt Fernald. We had traversed the coastal route before, by buckboard or steamer, and so were eager to find some adventure, especially of a botanical sort, in the mountainous interior. Fernald and others had been up the Ste. Anne River, to the remote and lofty plateaus of Tabletop Mountain and Mt. Albert, but no botanists—and probably few persons of any sort—had penetrated to a group farther west, where maps vaguely located a little known Mt. Logan, named for the distinguished Canadian geologist, Sir William E. Logan.

Inquiry at the thriving village of Ste. Anne, where everyone knew everyone else, quickly discovered for us the house of Fernald's former guide, Joe Fortin, who welcomed us warmly and gladly entered into our plans for exploring Mt. Logan. He had not been on that mountain, nor apparently had any of his neighbors, but Fernald was known to him as a vigorous man in the wild, and he to Fernald as a resourceful guide, competent in all details of transportation, food and shelter. We accordingly arranged to leave the car at Ste. Anne and from the neighboring village of Cap Chat to ascend the valley of the Cap Chat River to the foot of Mt. Logan, and thence climb the mountain itself—all apparently a simple process, at least on paper.

Up the river for seven miles a side-road of not too rough riding brought us to the house of M. Emond, at that time the last habitation before entering the wilderness, where eight children kept Emond and his wife from feelings of loneliness, and where the tightly closed double windows—not removed during the short summer—excluded unwelcome outside breezes. Thus preserved from air we spent the night, and in the morning breakfasted upon cold tomatoes, fresh from the can. We bade farewell to the Emonds and almost to civilization, and for seventeen miles up the valley of the beautiful Cap Chat River followed a rough logging road to a lumber camp near the influx of the Rivière Pineau. These miles had to be walked rather than ridden, for it took most of Joe's buckboard to carry our supplies, and so many trees had fallen across the road that there was no time to chop out any save the most impenetrable. Over any ordinary windfall up to a foot and a half or two feet from the ground Joe's long-suffering horse would step, hauling obliquely after him, wheel by wheel, the much enduring buckboard. In comparatively clear stretches Joe might ride a little, at intervals remarking in a half-undertone to the horse, "Marche". At more interrupted spots this command changed to "Marchons", often with a toss of the reins, while at

points of greatest difficulty Joe would jump out, urge the horse and buckboard over a log, and loudly exclaim, "Marche donc!"

A not uncomfortable logging camp of the previous winter received us, for a base, furnishing a tight roof for us and a convenient hovel for the horse, and from it next day we roamed on foot along the river, looking for the picturesquely named peaks described on the maps as Bonhomme, Nicolasbert, and Le Frère de Nicolasbert, and making identifications of a very tentative character. From an occasional bluff on the way in, however, we had seen that the main massif of Mt. Logan was higher and more remote from the river than any of these.

Accordingly, for our next step we left at the camp all superfluous baggage, gave the horse in his hovel an extra helping of hay (cautioning him to ration it carefully during our absence, and not to eat it all at once), packed up our tent, sleeping-bags, food and collecting equipment, waded across the Cap Chat River, and penetrated the primeval forest, where traces of moose were abundant and those of men entirely absent. Aiming at what seemed the highest point, we plodded up into a wild valley, in which we camped, and upon which I bestowed the name of "Fernald Basin", while Fernald and I simultaneously proposed for a peak at its head the name "Mt. Fortin".

Next day came the climax of this season's collecting. Up through scrubby thickets to open slopes, covered with plants like those of the Rocky Mountains, we advanced, and lunched at a little pool near the height of land, from which a tiny rill descended we knew not whither, to the St. Lawrence or else to the Bay of Chaleur. Beyond was a still higher peak, presumably Mt. Logan itself, but the oncoming of a thunderstorm prevented our reaching it and drove us back to our temporary camp, drenched but exultant, since I had that day gathered about twenty-five species new to me and Fernald many to delight him.

Next day we rejoined the horse, who received us with unfeigned joy, and with a repetition of "marche", "marchons", and "marche donc" we came out at another house in one of the interior ranges or "concessions", where we supped with M. St. Pierre and his twelve sons and three daughters, after which we continued to Ste. Anne in the late evening.

After days of preparing and drying the plants we had gathered, Joe in the buckboard drove us still farther eastward, where the road, then as now, to avoid impassable cliffs, rises from sea-level to twelve hundred feet and then descends to the sea at the next cove. On one of these uplands I was for a short time alone, and saw approaching a one-horse vehicle with a French Canadian and his wife riding in it. As they reached me there was heard overhead a sound which I at once recognized as that of an airplane. They also heard the noise, and looked all about for its source. I

caught their eyes and pointed upward. Such a look of incredulity as came into their faces I have never before or since seen; it was as if they had said, "But there is no such creature". (I learned afterward that this was the first airplane which had ever visited the north shore of Gaspé.)

Our short trip to the Mt. Logan range merely whetted our appetites for a more thorough one, and the next summer saw a party consisting of Fernald and myself with five other botanists, supported by Joe Fortin and two assistant guides, driving to Emond's and thence, by stages, ascending the Cap Chat River, as in the previous year, and establishing a camp high up toward the treeline. Our sturdy guides cut a trail—since then, I am told, a regular route to Mt. Logan—and came and went, bringing up supplies and carrying down our collections of plants. A large tent gave us protection, and supplies of canned goods we varied by boiling and eating the young fern fronds as a substitute for asparagus.

From our higher camp we found it easy to reach the summit of Mt. Logan, where we enjoyed the extensive views northward across the St. Lawrence, toward Anticosti, northeast and east toward the great mass of Tabletop and the sterile brown serpentine plateau of Mt. Albert, and in other directions toward a wild maze of unmapped and unnamed peaks. Sharp descending ridges separated huge cirques, from the tops of which cascaded streams from many a spring and lakelet on the park-like upper slopes of the mountain. How we divided into groups to explore each chimney and open ridge, and what remarkable finds the different parties discovered has been related in strictly botanical journals; suffice it here to say that a week's investigation by seven collectors did not begin to exhaust the rich possibilities of this mountain.

When the time came to return it was decided that three of us, with Joe as our guide, should linger for a couple of days more, to put some finishing touches on our explorations. We roamed the crests, descended into chimneys, and found ourselves late in the first day near the treeline on Logan, with heavy packs, slogging along in a chill, sleety drizzle. If ever one might feel at his worst it was then, miles from any base, cold, hungry and weary. But here the born woodsman took efficient command, and within an hour's time Joe had our tent set up, fir boughs placed with dry canvas covers over them, an enormous fire blazing, and a start made upon a warm supper. A snugger evening than we spent at our cheerful fireside, with Joe all night long piling on whole trees (of small stature, to be sure), it would be hard to imagine. After this cozy night, we found in the morning that everything outside our tent was white with a heavy frost.

When, at other times and in other affairs, I have been tempted

to discouragement, I have sometimes thought of that night on Mt. Logan, and of the dramatic change which one determined and competent person can produce against an apparently hostile environment. And when last summer, as I passed through Ste. Anne des Monts, I found Joe Fortin, now retired from active woodsmanship because of age, yet still enthusiastically recalling the adventures of thirty years ago, I felt thankful for the patience, the reliability and the initiative, both physical and moral, which he had exhibited.

Marche. Marchons. Marche donc!

Levavi Oculos

Much has been written, notably by John Ruskin in *Modern Painters,* of the effects produced by mountains upon man's artistic, literary and religious thought; effects productive, at times and in some places, of feelings of sombre solemnity and gloom, but more properly of what he designates as "mountain glory", whether arising from geologic form, beauty of mountain forests, atmospheric coloration, or cloud shapes and pictures. (This contrast of gloom and glory Ruskin perhaps got from Tennyson's description in *The Daisy* of the effects produced by Milan Cathedral.) But while recognizing that, for him, "mountains are the beginning and the end of all natural scenery", and that no part of Italy or Greece is out of sight of mountains, he hardly explains in any adequate manner why men's enthusiasm for mountain scenery and for adventure among the mountains was—save for a few aberrant exceptions like that of the Emperor Hadrian—so late in developing. When he suggests that "the mountains of the earth are its natural cathedrals, or natural altars, overlaid with gold, and bright with broidered work of flowers, and with their clouds resting on them as the smoke of a continual sacrifice", and cautions against setting up in the mountain temple the tables of the money-changers, he may be not unreasonably charged with the fallacy of comparing great things to small, as Virgil's Tityrus compares the metropolis of Rome to his own little market town.

Is not the explanation, perhaps, of the increased modern appreciation of mountains that, from the time of the Renaissance and more and more strongly during recent centuries, mountains have represented for men—and especially for men wearied or disgusted with the complexities of life—an escape from the artificialities in which they find themselves entangled, into conditions of nature in which they are no longer socially or economically or politically stratified into castes and surrounded by corresponding taboos, but in which they are not only equal—as might be the constituents of a crowded subway train—but also dignified as independent, and to some extent self-sufficient, human individ-

uals? In other words, for many of us mountains represent our last remaining frontier, with all the thrills of discovery and of possible risk which the frontier affords.

In lesser degree the lowlands may at times minister to the same sentiment. Henry Thoreau observed that more or less insensibly, when he started out for a walk from Concord, he went in that direction where there was the most of wildness and the least of human "improvement", and his longer and most rewarding excursions were not to the cities or the universities but to the lonelier beaches of Cape Cod, the less traveled highway of the Concord River, or the depths of the Maine Woods, there to associate, if at all, not with the holders of academic degrees but with shrewd, competent, and weather-beaten graduates of the school of fundamental human experience.

It is, then, the wild and natural as opposed to the tame and artificial which many of us seek, either intelligently or ignorantly, and while untamed nature may be present in the barren lands of the Canadian Arctic it is, for most of us, more accessibly concentrated in mountains, with the added charm that most real mountains, products of powerful geologic and meteorologic forces, have a definite individuality which lowlands possess, if at all, in a more diluted and less easily apprehended form. But the mountain must be a genuine one, free on its summit as when it was discovered, not encumbered and beplastered with railways and funiculars and hotels and helicopter landings and television antennae—all ways of reducing the wild and natural to the tame and artificial. No Mount of Transfiguration can be the same after a well-graded motor road has been bulldozed to its top, or where summit concessionaires are soliciting your purchase of the day's newspaper or the most insistently advertised soft drink. No, unless the money-changers be expelled from the temple the true worshippers of Nature must fare farther and farther afield, to peaks perhaps less lofty by surveyors' measures but still untamed and unspeckled by commerce.

"I will lift up mine eyes unto the hills", said Mr. Chesterton, "but I will not lift up my carcass unto them", and those of us whose displacement is markedly inferior to his may, perhaps, as age creeps upon us, comfort ourselves with his maxim. Yet it must still remain true that appreciation of mountains comes most completely to those who at least bear in their hearts the memory of heights toilsomely surmounted, summits breathlessly attained, of the gloom of cloud and rain, the glory of snow or sunset, with the thrill of unsuspected peaks on farthest horizons discovered. "Between us and Excellence", says Hesiod, "the immortal gods have set the sweat of our brows; long and steep is the path that leads to her and rough at the first, but when one has come to the top then she is easy, though before she was hard."

MOUNTAIN LEADERSHIP

by WILLIAM LOWELL PUTNAM

I. ON THE TRAIL

THERE ARE TWO SALIENT REQUIREMENTS for being an effective leader in any field. First, one must have considerable knowledge in the field, at least comparable with that of one's associates. In leading mountaineering trips, particularly, much experience, both theoretical and practical, is essential. Second, one must be intuitive in recognizing and analyzing and, most of all, in sympathetically understanding the problems and difficulties with which one's associates are forced to contend.

In running a climbing trip, at certain times commands are necessary, but in order to achieve the highest degree of success it is important to have all the participants fully imbued with a desire to attain the common objectives. This type of indoctrination cannot be accomplished if the leader does not explain everything and take all his associates into his confidence. A leader, at the outset, must do considerably more work than he would like to, but very soon gains the complete and sympathetic support of everyone else so that his tasks become increasingly easy as time goes on. There is no aspect of leadership that is more exhausting than that of bearing the complete load of responsibility for all the decisions, both right and wrong,—and, more important, both pleasant and unpleasant. A commander has to keep it all to himself; a good leader can have all hands sharing this load, while he still maintains the complete freedom of choice that his greater knowledge justifies.

The most common, or least technical, form of mountaineering is mountain walking, since it is from this base that one graduates to rock climbing, ice climbing and high alpine endeavors. One cannot be successful or competent in expeditioning or alpine mountaineering without a thorough knowledge of the basic fundamentals of walking and camping, any more than one can be an atomic physicist without knowing the multiplication table.

Conservation of energy is not just a scientist's expression; it is also a mountaineering law. If you have a long haul ahead of you, don't let your party waste time or energy in non-productive side-issues. Restrain the exuberance of those who want to

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This article deals with the problems of leadership within small groups of persons not differing too greatly in age, ability and experience.

run up the hill and cut off the corners by taking that little scramble-pathway in order to save the longer zigzag. The leader must constantly use and enforce among his associates the recognized cadence of pacing that marks the experienced mountaineer. This is important when on and off trails, on the level or upgrade. However, stride and cadence depend on conditions, and also the leader should bear in mind the strength of his party, the distance left to travel and the amount of daylight left to do it in. When bushwhacking, it is almost impossible to maintain a steady pace; but even under these unpleasant conditions extra long steps should be avoided and steep slopes detoured.

We always seem to be obliged to carry a pack. A one-day trip generally means a small pack; a one-month expedition means

repeated relays of heavy packs. No one should attempt to carry heavy, bulky loads except on a packboard; yet countless characters try, to the dismay of those who have to help carry the excess when their packs fall apart. Heavy loads should always be carried high, so that the weight is essentially bearing downward and not tending to pull you over backward. If you cannot tie your load securely onto a packboard then use a Trapper Nelson type of board where ropes are not needed.

The leader should take pains to point out little tricks to the less experienced members of his party. The strain of a heavy pack can get pretty fierce on the shoulders unless it is broken occasionally by rests; but rests, taken sitting down, are time-consuming. Leaning back against a tree or large rock takes the strain off your shoulders sufficiently to allow recuperation, without the exertion of regaining your feet. When carrying an ice-axe or similar implement one can swing it behind and under

the pack and grasp it with both hands. This will enable the load to be carried on the outstretched arms, which can hold a lot for a long time. When this stunt has been utilized to its maximum, then you can try shifting the load a bit so that some of it catches on your belt. I like this one, personally, and always use a string board for this reason.

Proper footwear is essential for any form of outdoor activity. In the mountains, it becomes of extreme importance; for you cannot get a new pair of boots so easily. The leader should make sure, prior to starting, that all boots fit the feet they are intended for. If at all possible, they should not be brand-new on the first day into the hills. Boots should fit when new, but more important, they should fit when wet; and then they should still fit after they have dried out again.

Of course, footwear is not the only item of clothing that is important. Man is a tropical animal, and must keep warm or he won't function properly. Wind is always worse at wearing down a man's resistance than is cold. Therefore, one should always protect particularly against high wind. Layers of clothing are more important than sheer bulk. Absolute impermeability to water is disastrous under winter conditions, for the human body sweats a little no matter what the outside temperature. Nothing is more refreshing during an extended rest than a change of socks. Wash the dirty ones and hang them outside your pack to dry. Never sit down to rest when you are going to get cold in the process; either put on extra clothing or, if such is unavailable, keep moving. The leader should see that his people have the right gear for the conditions which he expects to encounter, plus a little bit extra for the conditions he may encounter without expecting to. But, at the same time, he should see to it that his party is not overloaded with unnecessary gear. I hesitate to think of what would have occurred on one trip, if I had not gone through the personal effects of the less experienced members of the party. From the pack of one younger expeditionary I removed two extra sleeping-bags and twenty pounds of unneeded clothing.

There is a tendency on the part of many people to drink water from every stream that crosses the route. This should be discouraged, since usually only an occasional sip is necessary.

When selecting personnel for a trip, from among people whom you do not know, don't assume that physical size means strength. The most durable mountaineer of my acquaintance is also the smallest physically. A small man can come much closer to carrying his own weight of pack than can a big man. Girls often can walk farther and work longer than boys of comparable age and size. There is a drawback, however, since girls tend to have a slower rate of recovery from fatigue. In other words, for a

given amount of work there has to be a commensurate energy expenditure, and the two remain fairly constant no matter what size or sex.

There is a psychological stimulus to being the first man in a group, to picking the steps and setting the pace, which gives the person in that position, often the leader, added energy. The leader should guard against letting this stimulus run away with the pace, but he should also, at the same time, be certain to keep the pace fast enough to attain the day's goal, while slow enough to avoid unnecessary fatigue. In a homogeneous party the leader should rotate the first position among all his party except where route finding must be an exact matter. Quite often it is necessary to rotate the first position to people who don't really have the experience necessary to good rout-finding, in order to give them an incentive to move along. The leader should also insist that all members follow the route picked out by the first man, except where it has proven very poor. The bad manners demonstrated by those who leave the chosen route on individual minor variations does a lot to discourage the first man from careful route selection and also tends to weaken party discipline.

When walking or expeditioning in almost any mountain area a party will often run across obstacles that are not really mountaineering problems, but which the leader is nevertheless expected to comprehend and surmount, such as getting through discouraging underbrush, around bottomless swamps, and across glacial rivers. Once involved in swamps or underbrush there is no course but to keep going in the desired direction. Route-finding in these places is a technique that is learned only by horrid experience and even then not very effectively, for there is seldom

a discernible pattern to the growth of vegetation in areas of disrupted drainage.

There are many methods of crossing rivers. If the river is fordable, but the current swift, one should be sure to carry weight enough to ensure good footing. If, on the other hand, the river cannot be forded, then one must either cut a tree to make a bridge, build a raft or swim. Remember your climbing rope, if one is available; it can save many risks and greatly speed the crossing. I have swum rivers carrying fifty-pound packs and waded rivers carrying three times that weight. I have half swum and half waded at the end of a long rope, but I have never gone into a substantial glacial stream without using a rope in one way or another. On one occasion, in order to get the bulk of our expedition across a stream of considerable depth and gradient,

two of us first managed to cross, practically naked. We used eight-foot walking sticks held upstream to lean into the current for crossing one braid of the river, and ended up rather undignifiedly swimming the greater braid. We then turned downstream to a point where the banks were higher and set up a Tyrolean traverse. Since there were no trees growing in this area we found some driftwood logs, stood them on end and anchored them firmly. One of our members held a collegiate hammer-throwing record and was able to toss the end of a long rope across to us. Then, with several taut climbing ropes as a cableway and a large carabiner as a trolley, all the gear and personnel were pulled over (except the last man, who was pulled over on a sled used as an aquaplane).

In bushwhacking one can often make use of bear tracks and, on higher elevations, of goat trails. These animals always know the country better than mankind and their tracks are a great guide to good going.

While back-packing through unmarked forest and obnoxious underbrush, I have often been grateful for the presence of my old malemute side-kick, Skagway. He fell off the logs, exposed the loose rocks, or skidded down the wet grass before I did, and he could spot the quickest route back to camp or out of the mountains. I do not, by this, mean to say that a dog is indispensable for a trip into the mountains, but there have been many times when I have been grateful and proud to follow an intelligent animal.

II. In Camp

A leader should know how to pick a campsite; he should also know when. One should not hold to preconceived ideas on where camp should be made when the party is so tired that further travel would be injurious, or when darkness or weather makes stopping necessary. Benighted parties have bivouacked only a few hundred feet from an established camp, and moved on easily and safely in the morning; stubborn men have got into serious trouble while attempting to make that last hundred yards. This decision on when to camp is complicated by the fact that often it must be made on the move. If you let a tired party rest while a bivouac is discussed, you will have a terrible time getting them moving again. Nor should halts be allowed when an exhausted party *must* attain an objective.

Much of the success of a leader depends on his manners while in camp. A leader must always do his share of the camping chores and at the outset of an extended trip he would be wise to do more. He must cut the wood and light the morning fire. He will not have to do this very long, for the other members of the party, in their desire to be helpful and cooperative, will soon take over.

The leader must harass the reluctant goldbricker into his share of activity, whether by a private conference or a public scene. The latter is often easier and more spectacular, but the former is almost always more effective.

I always prefer to set myself up as cook at the outset of an expedition, for I find that this shortly leads to practically everybody else volunteering for the job. I am then relegated to washing the dishes; but I have found that the good mountain stream which flows near all well-selected campsites does the bulk of my dishwashing for me.

I also start by cutting the firewood myself, until I have discovered who can handle an axe. Axemanship is a fair indication of general outdoor capability. But for teaching axemanship there are better times than when expeditioning in isolated areas far from competent surgical facilities.

Preparations for the activities of the next day should be made the evening before, while there is still daylight. It is a great deal easier to locate pitons, chocolate bars, extra sweater and all the miscellaneous paraphernalia of a climb while unhurried and relaxing before sleep than in the predawn cold of alpine camps.

The leader doesn't always have to be the first one into the sack at night, although when advisable he should set the example. But he should be the first one out in the morning. And he should not tolerate the chronic sack-rat who is likely to hold up the party by his failure to get organized and under way in time.

A leader must take great pains to discourage miscellaneous mess-making, out of consideration for his fellow man and for the property owner whose guest he may be. Moreover, his reputation will spread out beyond the limits of his party after the trip is over, and if a toleration of sloppy activity has been the routine of his expedition, he may even find himself in trouble with the law.

Within the bounds of good sense, a campsite is a place of rest and relaxation where the tensions of the day should be forgotten. The leader should exercise as little of his authority as possible while his party is at rest. He should, too, participate in, and sometimes organize, the occasional tomfoolery of expeditioning. These little things do a great deal to ensure teamwork on the big things. I know a top-notch climber, practically unexcelled at the technical aspects of mountaineering, who is lost at anything else. He cannot even play bridge. After a few hours of any snowstorm, his repertoire of jokes runs out and the other members of the party soon relegate him to a corner, where he vegetates until climbing can be resumed.

One of the surest ways to attract and deserve the attention of one's climbing associates is by knowing the history of the area in which one happens to be. Practically any mountaineering trip that has done anything noteworthy has been written up in some alpine journal. These accounts are of great value when planning a trip into the area. Even accounts of trips to other ranges are often of considerable help, for it is not the detail which is important, but the basic method. I should like to urge the leader, however, to read carefully between the lines, in order to eliminate the smoke-screen of verbiage that may be thrown up to cover oversight or error. I do not plead completely innocent myself on this count, and can thus advise more honestly. One can often learn much about unexpected problems and difficulties of trip management which not all chroniclers are in a hurry to point out.

Around the campfire, a leader can add greatly by knowing more about the range than the eyes can see. Also, a certain

amount of what might be called classroom work could be included. I often teach fundamentals or, with more experienced people, fine points of map reading and compass usage. Map-reading ability, essential for a leader, can be learned effectively only in the field. Although route finding is more of a subjective art, still it pays to talk it over with those who are learning the game. Many times a smattering of geologic knowledge gained in such discussion has led to the successful completion of an important route.

I look back with fond memories to the many evenings spent in comfortable timberline camps, or even in the cramped cold of camps high on a glacier or storm-swept ridge, when I have learned much from associates who were superior to me in mountain experience. I feel pride, too, in having passed on, under the same conditions, much of this same knowledge and perhaps a little bit of my own, to other and younger mountaineers.

III. On the Climb

At some stage in our mountaineering education we learn about rock climbing. In order to be a competent and safe rock climber one does not need to be always doing Class 6 work, or even to be capable of Class 5 climbs. Often the rock climber with less ability is more cautious, hence safer, provided he knows and understands his limits. This last is, however, a bit of knowledge that is not attained by most of us until we have had several seasons of active experience. Safe rock-climbing ability is a prerequisite to effective high-mountain leadership.

The most desirable quality lies in knowing when to turn back or change the lead. This point depends on the experience and condition of the other members of the party. Changing the lead provides a fresh and unprejudiced approach to the particular problem in hand, and is just as valuable in rock climbing as in many other fields. After leading for several hundred feet on fairly difficult rock, the leader becomes tired. If he is then faced with a more than usually tough pitch, he should ask his second man to take over. Even though he may not be so good a climber, he is considerably fresher. Furthermore, he is generally so inspired by the challenge that the climb is completed more rapidly and with less danger to all concerned.

While complete technical perfection is not necessary, a person who sets out to be a leader must have long since demonstrated his complete solidity on rock. He must be possessed of a high degree of rock-climbing ability, he must know and understand all the techniques of rope handling and be smart enough not to fall for some of the more bizarre uses of the rope with an in-

experienced party. He must be able to listen to a piton and tell from its tone what its holding power is likely to be.

Thorough knowledge of snow and ice conditions is also an unconditional essential for any high-altitude climbing, and is valuable for skiers and wintertime trampers as well. Alpine mountaineering involves step-chopping under varying degrees of difficulty, from soft, crumbly glacier-ice to hard water-ice, and from hard crusted snow to verglas. An effective leader must have considerable experience with these basic conditions under many types of weather.

Far too many mountaineering accidents have occurred because the person in charge of the party has failed to understand the snow conditions with which his party became involved. Avalanche accidents have occurred in practically all mountain areas and under almost all weather conditions in all four seasons. Experience with avalanches has far too often been gained the hard way, and in consequence has not been effectively passed on to succeeding generations. A friend of mine was killed on a high alpine expedition because of the inability of any member of the party to recognize a saturation-at-depth avalanche condition. This is a rare but nevertheless extremely lethal phenomenon. It is wise to become familiar with the instability of snow before going into regions where avalanches are likely to occur.

I have avalanched myself, many times, but only once has this occurred involuntarily. Riding down a saturation slide on a sunny slope is really a tremendous lot of fun and is certainly the quickest way off a mountain, *if* you know what you are doing. On this other occasion, however, I was just learning about winter mountaineering and although on a rope with some fairly experienced people, a fall of new snow had so effectively disguised the slope that none of us recognized a windslab we were crossing. Fortunately, it was only a little over a foot thick. When it broke we all went with it, but I can still remember the feeling of great pride I had that I was able to arrest and hold myself after slipping only a few feet. Since I was in the middle there was tremendous tension on the ropes leading to the others, which gave me a feeling that I was really doing a doubly noble job. Great was my surprise, when the atmosphere finally cleared, to note that the leader was almost exactly where he had been when it all started and so was the third man; the tension had been caused by the blocks of snow pulling on the rope between us.

A quick recognition of windslab is essential to longevity. The common saturation slide is almost harmless, yet people have been killed by them even in the White Mountains. A leader whose party is avalanched is not likely to go on many more expeditions.

When traveling over extensive snowfields in high alpine areas, it is important that the party cover the terrain with the least stringing out, while at the same time being aware of danger from hidden crevasses. While taking due precautions to avoid losing members of his party in such holes, a leader should at the same time make sure that his second man is packing the steps and making the trail easier for those who follow. A party in these conditions will of course be traveling roped.

An integral part of the process of acquiring respect from one's associates is the necessity of demonstrating one's competency in the field. But in this regard it is important not to overdo the point. A leader who insists on displaying his own personal skill will soon find the rest of his party growing apathetic. If the others are not given a chance to participate, and even occasionally forced to participate, they will lose interest in further knowledge of the subject.

A leader soon ceases to be such and ends up by being a solo climber if he is unable to understand the problems of his associates. There have been instances even on great and well-planned expeditions where the failure of the leader to appreciate the weaknesses of his companions has resulted in loss of the objective and perhaps loss of life. This situation results first in a lack of communication and understanding between the members of the party, then in lack of coordinated activity, and finally in disorganization of the whole undertaking. If there is one quality essential to successful management of an enterprise as potentially liable to injury and accident as mountaineering, it is consideration on the part of the top man.

But while being considerate of his associates, a leader must take pains not to let their mood and spirit run away with his good judgment. Even the best of experienced climbers can get swept away with enthusiasm when a number of less experienced hands point out how simple a route appears. Only long exposure to mountains makes a good route-finder. People whose experience is limited often feel that major problems just don't exist.

And finally a note on the end of a good climb. The most dangerous part of any climb is the start of the descent. The party are elated with victory and feel that there are no further obstacles to overcome. More mountaineers have been lost just after the moment of victory than in the throes of defeat.

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TRIP LEADERSHIP IN THE WHITE MOUNTAINS

by Bradford F. Swan

The most important single qualification for a good trip leader on the Presidential Range, and to a lesser extent elsewhere in the White Mountains, is *knowledge.*

The leader must know!

He must know which route to take to suit best the conditions under which he is operating. He must know that route thoroughly. He must know the "escapes"—the quickest, easiest, safest routes to shelter or to civilization or to a source of aid. And, naturally, he must know when to turn back or when to use one of his escapes.

He also ought to know the sources of drinking water, the whereabouts of emergency shelter sites, and the landmarks. The trip will be a richer experience for all his charges if he knows some of the happy aspects of the trail, such as good viewpoints and something of the mountain flowers and geological formations.

There is no adequate substitute for real knowledge of the terrain. But unfortunately one of the most difficult tasks facing anyone concerned with mountain leadership and safety is convincing others of that simple fact.

After all, when groups of boys and girls scamper up and down Mt. Washington via the Tuckerman Ravine trail system in a day, how can you convince them that knowledge of the mountain is essential to safety? The fact is, of course, that it isn't, if you have luck instead—luck with the weather, luck in taking the right trail at a junction, luck that no one turns an ankle or wrenches a knee, luck that the local fat boy finally does straggle in an hour late, just as it is getting dark.

But when the luck doesn't run that way the best thing you can have working for you is knowledge.

In the Presidential Range in summer almost all dangers, both subjective and objective, can be overcome by knowledge. Except for one or two trails, which shouldn't be used by anyone but experienced climbers, the Presidential Range contains few subjective dangers. "Exposure", in the rock climber's or the alpinist's

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sense of that word, doesn't exist on the normal walking trails. The subjective dangers in the Presidentials all stem from lack of knowledge and its resultant shattering of morale. Getting panicky and doing something foolish can prove as costly high on Mt. Washington as getting dizzy on a Himalayan snow cornice or "freezing" to the vertical face of a peak in the Dolomites.

Taking a trail which is too difficult for your party can get you into all kinds of trouble. So, too, can not knowing how to get out of a tough situation in the easiest way, not knowing when to abandon a storm-swept ridge for a sheltered escape trail, not knowing when to keep pushing ahead for safety *when it really is near,* and not knowing when to turn back.

The objective dangers are serious enough, as all who have climbed in the Presidentials know. They are wind, cold, rain, icing, slippery rocks, wet roots, thunderstorms, and an accident to some member of the party.

These, if the leader lacks knowledge, are transformed immediately into subjective dangers, such as panic, and only knowledge, and the morale which it sustains, can keep them in proper perspective and thus enable the party to overcome them.

Pace, so important to both the safety and the happiness of a climbing party, is directly related to knowledge. The leader should know how far he must travel and at what speed he should proceed under the existing conditions. A good leader sets a good pace, and the best pace is a slow, steady pace—one which can be maintained throughout the length of a day's work with as little change of rhythm as possible. It should be a pace which will not exhaust the weakest walkers in the party, and it should tend to restrain the strong, eager, over-ambitious ones who might otherwise burn themselves out. Such a pace often seems deadeningly slow at the start, and doubtless it will always be too slow for some of the strong climbers. But they must make this sacrifice for the good of the others and for the safety of the whole party. On the other hand, dawdling should be prevented at all costs. If someone is dawdling for no good reason, put him in a position in line where he can be kept going at a reasonable pace. If he is dawdling because he is ill, handle the case as your judgment dictates—just as you would any other accident on the trail.

A proper pace, once set, should be maintained as evenly as possible. This is better in all ways, and less tiring. Keep moving, even slowly, rather than stop for prolonged rests—in which the "second wind" is lost.

There is nothing wrong, to be sure, with taking a brief rest from time to time as conditions demand, but the best way to do this is to rest standing in the trail for a few seconds, with your pack propped on something if it is a heavy one.

A trip leader should make a definite distinction between such "breather" rests and the longer breaks that are clearly part of his plan—for instance, the lunch rest. The "breather" rest is taken without the members of the party leaving their places in line, and without taking off their packs. If it entails getting a drink of water from a spring or brook there is still no need for breaking up the line of march and getting out of order. On the other hand, when a longer rest like a lunch break is taken, complete relaxation, getting out of one's pack and off one's feet, and even stretching out on the ground (if properly clothed to remain comfortable in wind or cloud) is advisable. A good rest of this sort at mid-day is especially recommended if the party consists of youngsters and the weather permits it, for the young recuperate rapidly but are less capable of a sustained effort unbroken by a good rest period. Of course such long rests are to be avoided when the weather is bad. Cold and rain can take a heavy physical toll from a person on a trail like the Gulfside if he doesn't keep moving.

At the risk of sounding like a frustrated drill sergeant, I still say it is the best plan to run a tightly organized party when climbing in the Presidentials, especially when above timberline and when children are in the group. And, since this is really important above timberline, it's a good idea to observe the same discipline lower down, so that everyone can get used to it and accept it as the natural thing to do.

Although it may be stressing the obvious, the first rule for such an organized party is to walk in single file. This is absolutely essential above timberline. If the party is composed of boys or girls they should "count off" in round numbers whenever you move out, and whenever you come in to a long rest-stop or to the end of the day's trip. Youngsters are also amused by being asked to "count off" from time to time while they are walking, and this is a good safety check to use if the visibility is poor because of cloud, rain or darkness.

Every party of youngsters should be accompanied by at least two counselors or supervisors—if counselors, then the best the camp can provide. If the party is to be above timberline in the Presidentials, where a great deal of the walking frequently has to be done in thick cloud and high wind on rough, wet rocks, a ratio of at least one counselor or supervisor to every five boys or girls is advisable. The two most reliable counselors should be placed at the head and rear of the line, and the one at the rear should have a whistle. A few blasts on this will signal those up ahead that something has happened back in the line and a halt can be called.

Any other counselors should be spaced out among the youngsters in the line. If the party uses a guide or has a trip leader in

addition to the counselors it isn't necessary to have a counselor at the head of the line. On the other hand, it is a good idea to have a counselor immediately behind the leader, so that they can confer without calling a halt and also so that this counselor can learn as much as possible about the route for future use.

There is no one ideal spacing for such a line in the Presidentials. Above timber, and especially if the party is in cloud or rain, a "tight line" is the best policy. Certainly each member should be impressed with the importance of not letting the one in front of him get out of sight. But when descending, and particularly on places like the steep parts of the Osgood Trail or the Air Line immediately after they enter the timber, the hikers should space out more, so that a slip doesn't knock the person in front off his feet and cause two tumbles instead of one.

At all times everyone should know his own place in the line —who should be in front of him and who behind. They should also always be ready to pass the word along, whether it is to take extra care or to note some special object of interest.

In handling campers and other young climbers the trip leader should be the absolute boss in making decisions on the trail and in giving orders. In the huts, however, or during prolonged rest-stops, it is up to the counselors to maintain discipline and see that their charges don't go wandering off. This extends to making forays outside the huts after the day's walk is finished, plunging around in the dark in rock-filled pools like Star Lake, getting into the line of fire on the quoit pitches, and turning the upper tiers of the bunkrooms into a jungle gym. The trip leader, especially if he has joined the party for this climb only, can hardly be expected to exercise this sort of discipline; it is the duty of the counselors.

Although the counselors, scoutmasters or whatever should be responsible for conduct in and around the huts, the trip leader should maintain a close liaison with them and not feel that his responsibilities end with the trail-guiding. He should be especially careful to check on the health of the youngsters. Children go off their feed very easily after an exhausting day, especially if they have been any place where they could use their spending money on candy, hot dogs, soda pop, and hamburgs of dubious ancestry. They are also susceptible to quick colds, chills, cramps and other ailments in the rugged country above timber, and it is wise to have the counselors constantly on guard to detect any such illnesses.

Remember that a child often will not report himself sick for fear of incurring the scorn of the others. Instead he or she will keep silent and quietly collapse at some most inconvenient point during the next day's march. Taking care of a sick camper at one of the huts isn't much of a problem, but when one collapses on

the trail the whole trip may be ruined and, of course, the safety of everyone seriously jeopardized.

Every person who walks or climbs has his own pet theories about what to wear and/or carry. Any discussion of such equipment would require a whole article, but I have a few suggestions which the wise trip leader will do his best to see are followed.

First, everyone should have his own pack; no doubling up on packs.

Second, stout shoes covering the ankles, with rubber-lug or nailed soles are best in the Presidentials, but most campers won't have them. The next best thing is the high, patterned-sole basketball sneaker. Boys will wear these, but I doubt if you can get girls into them. They will generally wear low tennis sneakers or rubber-soled saddle shoes. You will just have to make allowances for this, particularly when you are traveling on wet rock or barked roots or pine needles.

Third, the most important single garment a climber should have is some sort of coat to protect him from the wind and rain. After a good deal of thought I have concluded that if you must settle for one such garment, let it be a raincoat. If a poncho is worn, be sure the wearer has some way to belt it in when the wind blows.

Fourth, both hats and gloves are extremely desirable. The gloves will save you many a nasty cut on the cruelly sharp rocks above timber in the Presidentials. The hats retain body heat in bad weather.

Fifth, a spare sweater, jacket, or heavy flannel shirt is a must, and so is a pair of dry socks.

The question of covering the legs is a moot one, but certainly every boy or girl should carry some sort of trousers or slacks to wear around the hut at the end of the day. They can be used to sleep in, too, and are really necessary for comfort and well-being.

The handling of accidents on the trail is a problem which must always face the trip leader. Much can be done to prevent accidents by exercising caution, being properly equipped, and constantly checking on the party's physical condition. Even so, some accidents are bound to happen. When they do, the trip leader must make the decisions, and what he decides should be governed by his knowledge, experience, and ability to weigh all the factors swiftly but calmly.

This article is not the place for an essay on emergency first aid; a trip leader should have that knowledge before he starts. His big decision will be whether to try to move the injured person to a place where medical aid can be administered or to split his party by sending, or going himself, for help. This decision must be made on the basis of conditions as he finds them. It is a golden rule above timber never to split your party, but naturally

this rule, like all others, has its exceptions, and if the weather is good it is always safer to split your party by sending for aid rather than to try to move an injured person without proper equipment, like a Stokes litter.

Remember, too, that there are probably very few emergencies in which blind speed is more essential than calm deliberation and proper caution for the welfare of all the party. Lastly, the trip leader shouldn't try to be a hero, dashing off for aid and leaving behind a panicky, demoralized, leaderless group. If he must go for aid himself, he should first make sure that his party has reasonable emergency shelter, has someone to look to for leadership, and will stay put until he returns.

Perhaps my philosophy as a trip leader tends to be over-cautious, and certainly it has been formed by my experience in guiding children from summer camps. But, when I am leading someone else's children, and responsible for their safety, I don't think it is possible to be too cautious. It is always a good rule to make your decisions on the conservative side. Keep in mind the fact that these people are *depending on you.*

A trip leader must also learn patience and understanding, and be ready to adapt his own inclinations to those of the party. His right to expect discipline and obedience, and to make the decisions, doesn't mean that he has the right to disregard the feelings of others. Common courtesy has as much place on the trail as anywhere, and thoughtfulness, patience, cheerfulness, good humor and a kind manner will do much to sustain a high morale in his party and make the trip both safe and pleasant for all.

ON CLIMBING MONADNOCK

by MILDRED P. GROOT

AS OF FEBRUARY 1, this year, my husband and I have climbed Grand Monadnock 246 times, all but a handful of them in the last eight years. Our friends wonder why we are not bored to climb the same mountain so often. Well, first of all, we cannot imagine ourselves bored on any mountain. We love them all, and on long weekends or during vacation times we climb in the White Mountains, the Green Mountains, or even as far afield as the Adirondacks or Katahdin. But until such time as my husband retires, Monadnock remains the most accessible satisfactory mountain for regular weekends. In the second place, the mountain's many trails give almost endless combinations, and not many climbs have been exact duplicates of previous ones. And then there is the mountain itself, with its many moods. We have climbed it in all kinds of weather—in snowstorms and summer heat, in zero weather, in thunderstorms, in fog and brilliant sunshine. We have seen its lower slopes ablaze with the brilliant autumn colors of the maple and the mountain ash, the blueberry and the viburnum. We have seen it so buried in snow that not a rock showed on its summit. We have seen it glittering with ice as regally as any royal diadem, and we have seen the summit hut so completely covered with lovely gleaming frost-feathers that it looked like a wedding cake.

Grand Monadnock has always been a favorite with the public. Scores of famous people like Thoreau, Emerson, Channing and Pumpelly, and many another well-known writer, scientist, naturalist or business executive, as well as ordinary people like ourselves, have explored its trails. Even world-famous mountain climbers have deigned to enjoy this 3165-foot mountain which has been affectionately dubbed "the poor man's Everest". On a good weekend or on a holiday several thousand people may register at the State Park on the Jaffrey side of the mountain. Not all of them climb; not all who climb reach the summit; but enough of them do to make Frank Smythe, the famous English mountaineer, say humorously that he saw more people on Monadnock than he had ever seen before on a mountain. In his account of his trip to Monadnock, as related in his book *Behold the Mountains,* he says: "When I saw that the summit was

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MILDRED P. GROOT (Mrs. Benjamin Franklin Groot) of Lexington, Mass., a member of the Club, graduated from Wellesley in 1918, where she had taken special interest in geology and botany. Since then she has climbed in all the mountain ranges of New England and New York.

black all over I thought it was some queer geological formation. Then I realized that the black was moving; it was people!"

And yet, for one familiar with the mountain's many miles of side-trails and links, it is possible to climb in almost complete solitude even on a day when the main trails are swarming with climbers. In fact, you will never savor the true delightfulness of the mountain until you desert the more popular and much-traveled trails and search out those little side-links, and even do some exploring on your own, where sometimes, perhaps, you will find an old abandoned cairn hidden in underbrush, or come upon a weather-beaten wooden arrow or trail sign. You can discover the ruined foundations of the Dinsmore Shanty, near Bald Rock, and the Inscribed Rock nearby with its carved date, "1826". You can find the little series of potholes in Mead Brook at about the 1700-foot level, one pothole being 18 inches deep and a foot across. You can find the perfect imp profile on the boulder not far from the junction of the Cascade Link and the Pumpelly Trail, or the beautiful drag fold on the south-facing cliff near the summit, or the location, near the Sarcophagus on the Pumpelly Trail, where the bedrock no longer dips from west to east but changes suddenly to a dip from east to west. Or you can find the bed of arbutus completely hidden off the trail, or the spot where the blueberries are the biggest and juiciest, or the secret cave with its barred windows, or the old "Lead Mine" with its drill holes, or Thoreau's campsites, or the old foundation of the stone rain-shelter, or that other foundation, as yet unidentified, near the junction of the Cliff View and Hello Rock Trails. You can find the map painted on a boulder near the Red Spot Trail, drawn to scale by Jack Frost of the Worcester Chapter. You can look at the perfectly carved words, "Kiasticuticus Peak", on the big perched boulder on Bald Rock and wonder over the name and try to find it in your Greek Lexicon, as we did; and then, after a helpful suggestion from Dr. and Mrs. Frost, discover the origin of the term in Mencken's *American Language*. You can tramp miles and not re-trace your steps. The mountain covers an area of about twenty square miles, and Allen Chamberlain estimated that the various trails total not far from fifty miles.

By all means acquire Chamberlain's priceless book, *The Annals of the Grand Monadnock*. It was this book which first lured us off the main trails and into the joys of intimacy with the lesser known parts of the mountain. And if you are at all interested in knowing what kind of rocks you are seeing (they are not granite, as one well-known columnist likes to term them), or in knowing how they got where they are, or in the meaning of the deep scratches on some of the rounded ledges, secure a copy of Katharine Fowler Billings' very concise and readable *Geology*

Mildred P. Groot

THE SUMMIT IN EARLY FEBRUARY

Mildred P. Groot

THE SUMMIT CABIN IN FEBRUARY

A CORNER OF THE SUMMIT HUT

ENTRANCE TO THE PUMPELLY CABIN

Mildred P. Groot

A BUSY DAY ON THE SUMMIT

Mildred P. Groot

THOREAU'S CAMPSITE OF 1860

Millard F. Gross

IMP PROFILE

Millard F. Gross

GLACIER SCRATCHES

of the Monadnock Quadrangle, published by the New Hampshire Planning and Development Commission.

The old-timers of the 1800's and early 1900's loved the mountain with fierce loyalty and spent their summers cutting new trails and giving romantic names to such favorite spots as Paradise Valley, Dingle Dell, Inspiration Point, Parson Ainsworth's Seat, the Doric Temple, Hello Rock, the Matterhorn and the Coffee Pot Trail.

And speaking of old-timers, I should mention that our gray hair (we are grandparents) has given us a chance for many a laugh. My favorite experience in this connection happened eight years ago, when I still flattered myself that I was not too near the edge of the grave. My husband and I had found the summit completely unoccupied and decided to eat our lunch there. Soon, however, an attractive teen-ager appeared and came over to say hello and chat awhile. He had started with a large group of boys and girls but had gotten far ahead of them. Eventually the others began to come in sight, all of them panting and groaning about the "hard" climb. They also stopped for a polite hello and then settled on a ledge not far from us—out of sight but not out of hearing. Suddenly, in the midst of their jumbled conversation, we heard a clear voice say, "What gets me is how did that old lady get up here?" My husband glanced sideways at me and then we both doubled up with laughter. For many years, after a particularly hard climb on some mountain or other, my husband would turn to me and say, "Well! How did this old lady get up here?" And there was the time when we were nearing the summit cliffs and met two grade-school boys. They paused to say hello; started on, and then one of them came back and said, "May I shake your hand? Don't worry, we will be right near you on the trail and if you have any trouble, we'll come back and help you."

We thoroughly enjoy the people we meet along the trails—some of them gray-haired like ourselves, some of them tiny tots climbing along gallantly on sturdy little legs, some of them mere infants riding in kiddie-packs on the backs of their perspiring fathers. And once in a while we meet some unusual people, like the eight-year-old boy we met on the summit cliffs carrying a little green snake contentedly wrapped around his arm, or the three men we found sitting on a ledge on the Pumpelly Trail. They had enormous bedrolls and rifles complete with telescopic sights, and greeted us with, "Have you seen any bears? Where is the best place to look for one?" And, though the incident did not happen on Monadnock, I cannot resist speaking of the young man we met on the summit of Mt. Moosilauke. He had never climbed a mountain before and, as he gazed at all the tall cairns on the summit, he turned to me and

whispered in a horrified tone, "Have all that number of people died up here?"

There is one other advantage, which should be mentioned, in climbing the same mountain many times, and that is the close friendships you make with other regular climbers and with the Park personnel. This has been especially true for us at Monadnock, where the Park Supervisor, Charlie Burrage, and his family have become intimate friends and where we thoroughly enjoy the Park crew. We have the comfortable feeling that if our car were discovered at the parking lot long after closing hours Charlie Burrage would round up a crew of the boys and start up the mountain with the basket stretcher to gather us up. This would, of course, be especially sure if Shirley Burrage, his wife, were on the climb with us, as she often is. For years we had the joy of having the Burrage's beautiful collie climb with us. She knew every trail, even when it was buried in snow. Now, however, in her old age she can only look wistfully after us as we start off.

I notice in re-reading my mountain note-books that the very early accounts of our climbs are short, giving scarcely more than a record of the mountain climbed, the mileage, and the trail used. But as our climbing addiction grew, my accounts begin to mirror our increasing interest in what we were seeing and hearing: a pileated woodpecker, a clump of Labrador tea, an unusually large or beautiful tree, an interesting dike formation, a handsome pocket of garnets or tourmalines, a trio of deer bounding up summit cliffs, a lazy porcupine on the trail, the thrill of the ruffed grouse drumming, the sweet call of the white-throat. We also began to carry a pocket altimeter to record our total altitude climbed, a wind gauge to record summit gales (we've registered winds of over 60 miles per hour), and a thermometer to record summit temperatures (the highest 103°, the lowest 1° below zero). We carry clippers and do a bit of trail clearing as we go along—a good habit we learned from Dr. and Mrs. Frost. And always we carry cameras, for thus when at last we reach the time when we can no longer climb, we can at least relive through our kodachromes the many mountains we have loved. And high on the list of them all will be the Grand Monadnock.

A TRIP TO KATAHDIN IN 1856

by HENRY I. BOWDITCH

PART II

AUG. 13 .... The sketch on the next page gives a tolerably fair idea of the general outlines of the mountain and of our course up to its summit. Camp Katahdin was on the top of the first slope, above the woods. Cedars from one to three feet high alone were there except, perhaps, in crevices like our camp place. Jack suggested an improvement in the proceeding of ascension, viz., to encamp where we lunched (see plate). This spot was beautiful and would undoubtedly always be so, as in the granite bed of rocky slide (S) is a dashing & clear mountain torrent admirable for drinking & bathing and with woods to its very margin. The next day's work would be more by following this course, but a comfortable night's camp more than recompenses for the difference in the amount of travel.

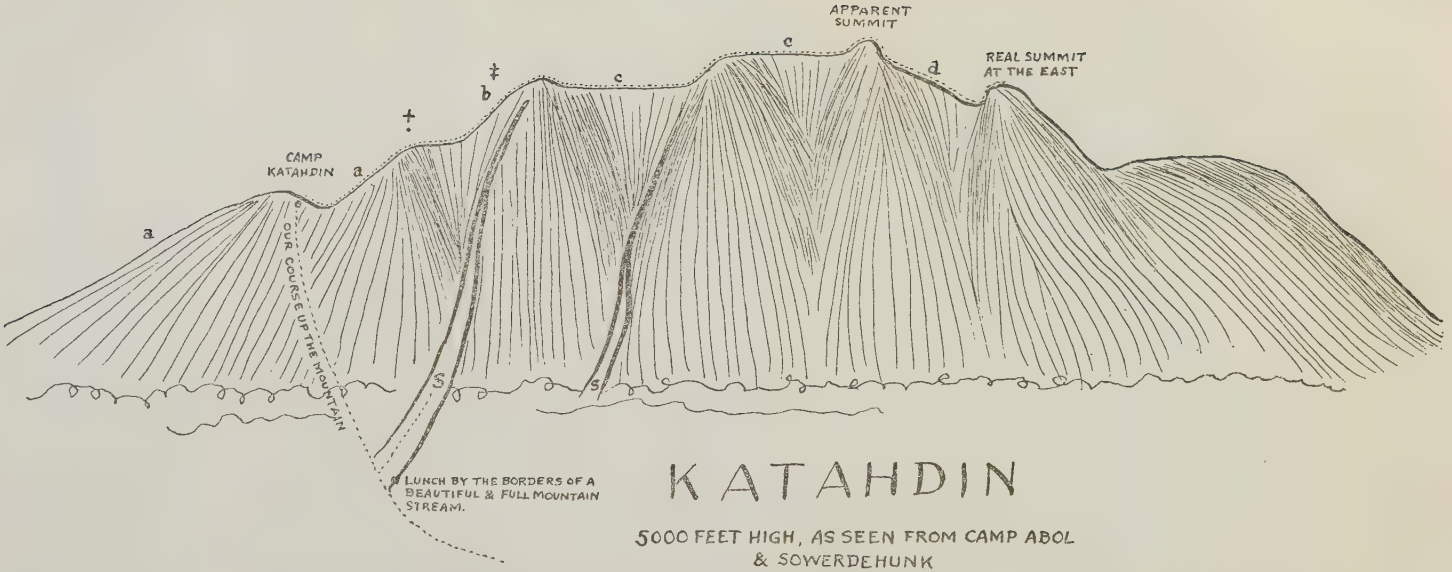
Aug. 14. Quitting our camp early as usual, we paddled to the mouth of Abol Stream. Save Lake George and the Fountain of Vaucluse, I have never met with such perfectly pure water. The bed of the stream is composed of disintegrated particles of the granite rock, washed from the mountain, & is of a pale straw hue. Everything is perceptible, even at the greatest depth, & at its borders we saw tracks of the moose. I would, *en passant,* remark our astonishment at finding the height to which the moose ascend upon the mountain. Tracks and other evidences of their pasturing were perceptible even amid the low & thick scrubby spruces which we could not traverse except with the use of the hatchet; i.e., wholly above that part of the wooded region which would seem most appropriate for them.

As no one of the party knew exactly what route to pursue in our ascent, Zeb took a general survey of the mountain and finally decided that, though perhaps a longer route, it would be much easier to strike for the southwestern slope and go along the southern edge to the summit. Accordingly, after drawing our canoes into the bushes and leaving all extra luggage, after strapping our packs upon our backs, we commenced our ascent at ¼

The first part of the article, with explanatory introduction, appeared in APPALACHIA for December, 1958.

We are again greatly indebted to Mr. Wendell S. Hadlock, Director of the Farnsworth Library and Art Museum at Rockland, Maine, for carefully comparing with the original manuscript the copy kindly supplied to us by Dr. Harold Bowditch.

Notes with the initials H.B. are by Dr. Harold Bowditch; those with the initials W.S.H. by Mr. Hadlock; and those with the initials R.E.L. by Mr. Robert E. Laverty of Millinocket, an authority on the history and geography of the region.



a, a. Part of mountain covered with thickly growing cedars from 2 to 3 feet high.
b. A steep, craggy precipice, one of the most difficult parts to ascend.
c, c. Level plateau covered with masses of low blueberry bushes and mountain cranberry.
d. [Illegible.]

of 9. We were refreshed by the blueberries which grew in great abundance & richness along our path. After ascending one hill we entered a thick wood, which we traversed in a single line, only occasionally broken as I went to Zeb to consult as to our proper course & to show him my pocket compass. This last was of great importance to us, for travelling as we did for three or four hours without being able to get a glimpse of the point to which we wished to ascend, and the sun being obscured by clouds, it is probable we should have wandered much from our course if we had not had constant reference to the compass. At length, after much labor, we reached the stream that pours its clear current in constantly leaping waterfalls along the great slide S. Here we lunched, and I took out my pocket pistol, which during my whole voyage I had carried with me full of brandy. And judge of my amazement at finding all had disappeared save about two or three teaspoonfuls—and this was our only liquor we had for the whole party, two or three bottles having been left at Rappagenus! The loss was irreparable, and so I filled the bottle with some of the mountain water, which was delicious indeed. Browne bathed; the rest of us dined on crackers and *raw* pork (I had not then made my studies on trichina). The disgust I felt at tearing the soft and stringy flesh was intense, but as the guides declared it was observed that those who could take such fare succeeded better than others, I partook of it in small quantities from a sense of duty. After a stay of about twenty minutes, we started again at 2 p.m. and, crossing the river, proceeded on our way. We toiled on until towards 5 p.m., when we arrived thoroughly "done up", fatigued not merely by physical labor but likewise by anxiety as to our course. As we went higher, the lofty trees amid which we had travelled grew gradually shorter and thicker with underbrush, making it exceedingly difficult to scramble along. Our pants were torn, our hats riddled by the points of bushes we went through headforemost, our legs and arms were scratched and bleeding, while in addition to all we had the persecutions of the black fly, which made our ears, eyes and noses swollen & red & tingling. The sight of the summit & the glance back at our six miles of wooded walk were somewhat encouraging, but we felt that much remained to be done before reaching the summit, & afterwards would come the descent! Perfectly exhausted, I threw myself down in a small open space, wondering how it would be possible to have even the semblance of a camp in such a bleak spot. Feeling rather miserable, more for the boys' sake than my own, I was suddenly exhilarated by hearing the joyous voice of our Pioneer Zeb calling out, "Courage, boys; come up here!" I sprang upon my feet and ran to where Zeb stood. Directly below him in a crevice of the rock, about twenty feet wide, was a little grove of spruces a little

higher than our heads, affording a good shelter from wind & rain. It was a kind of Robinson Crusoe nest and we gladly ran into it. In a few moments a space was cleared and a fire built. A regular camp covering was impossible, so each one was directed to take his enamel cloth & blanket & to choose his spot on the ground where to lie. Browne and Nat subsequently gave up to the guides blankets, & two of us bunked together. The spot we had found seemed providentially arranged for us. I was willing, at least, to believe that the Mysterious Power which guides me had led us to that, the only spot capable of receiving us. Inwardly, my heart arose in prayer to Him who all my life has led me and now had brought us all to this haven of rest!

Everything, however, is relative. Our place, though better than any other at that height upon the mountain, was by no means an agreeable resting-place. We determined to divide the night into watches of an hour each. This was partially carried out. Nat and Frank were up for their hours. But Browne & I were working, cutting down shrubs & keeping an uncertain fire going during the night. The wind blew coldly & fitfully through our arbor, driving smoke and sparks over the sleepers. Selfishness peeped out of the garb of some whose sole aim seemed to be to monopolize all access to the fire for themselves. Occasionally I wandered out upon the open brow of the summit. Below me lay the sleeping earth partially hidden by clouds. The moon shone mildly but with a watery face over her full orb. Everything was quiet save some uneasy beatings of my own heart. The sound of the axe & crackling of fine wet branches of the spruces occasionally, it is true, disturbed the deep midnight stillness. Awe at our position & anxiety for the young people committed to my charge mingled curiously together as the night wore on. Finally, an hour and a half before the break of day, I called Zeb & requested him & his friends to keep watch, & Browne & I lay down to sleep. So passed the first day of our ascent.

(I forgot to mention that before reaching the stream alluded to above, we stopped for lunch on *raw* pork & crackers, by the side of a lake. One other very important fact for us was that on our arrival at the camping place we found, as the brandy had disappeared, so our water was nearly gone—only a few teaspoonfuls remaining! Not knowing what we might need next day, fearing that some one of us would need the refreshment of even a small quantity of water in order to enable him to travel, I decided to retain it. But our thirst was extreme during the night, & Nat, after his watch, begged to be allowed *one teasponful* of it. This I granted, telling him to *retain it for a long time in his mouth.*)

Zeb & Tim, previously to the closing in of night, had spotted their way to the commencement of pure craggy climbing. This

was of infinite value to us, for it relieved us of at least two hours' climbing amid an unbroken mass of low spruces matted closely together, so that one could almost walk upon their tops.

Aug. 15. About 5 a.m., after breakfast, like our meals of yesterday and no water, we started. Browne, however, declined to proceed, being entirely broken down. We left him with sorrow & with misgivings as to the result, because the brow of Katahdin was heavily laden with mist and large black volumes of the same were rolling up from the north. The Indian legend was about to be fulfilled. The Great Spirit who dwelleth on the summit is unwilling for man to penetrate to his abode. Whenever, therefore, any one rashly endeavors to reach the top, the Spirit clothes his mansions with mist & storms, so that the bewildered traveller is forced to return or be lost. Thanks to Zeb's & Tim's efforts yesterday, we were able to get along tolerably easily through their half-cut path until finally we arrived at the blueberry bushes and mountain cranberry. Both were inferior to what we found below, but the moisture we gained from both was so delicious that we did not mind their bitter taste. Arriving at the spot marked with a cross on the map of Katahdin we stopped about two hours, hoping the weather would clear up. The summit was still invisible. Below, at times, we could see the green forests; at others, all had vanished. To ascend ignorant of our way seemed rash; to descend seemed a miserable termination of our labors. Zeb, I could see, was very desirous of pressing onward. I urged the responsibility of my situation, and we built a fire, ate berries, and gathered our half-pint mug of them for Browne, thus in laboring for him forgetting ourselves. After an hour or more I finally consented at 8.30 a.m. to ascend the next craggy path & then decide upon the course to be pursued. I saw that that crag (marked on the sketch by a vertical line with two crossbars) would lead to what seemed to be a level plateau. The scramble was at times terrific, over huge slippery rocks, & the question of the possible descent from which pressed heavily upon me. Something, however, sustained me, & we arrived upon a soft, mossy bed, covered with berries. We eagerly bent to eat them, but soon I saw all my young folks prostrate on their faces. *They were sucking the dewdrops from the leaves of the bushes!* It was delicious and we were soon all similarly occupied. As far as I could see reached the plateau, and as we could keep along the edge of the mountain, which was studded with masses of stone similar to those we had ascended, I had little or no fear of losing our way. Our guides, moreover, knocked off pieces of the stray stones lying in our path or they laid smaller stones upon the larger, thus "spotting" their path as effectually as in the woods. We gave three times three cheers for Browne when we arrived at the plateau and then sped on our course, Zeb leading the way

with his cheering "Upwards, onwards, my boys". We still kept in a single line, and but a short distance from one another, in order that there might be no stray sheep. All at once Zeb cried, "Hurrah! my lads, here's water! water!" We rushed forward, and in a basin of granite we found several gallons of pure clear water. We bent all around the stone and drank deep draughts of the liquid, which seemed to me like the nectar of the Gods. In commemoration of our gratitude & as a guide to future explorers we erected a monument of stones upon the side of the basin. I emptied a laudanum bottle I had in my pocket & tearing a leaf from my note-book wrote at the suggestion of Charley or Henry, I have forgotten which, "Drink, weary Pilgrim! Drink!" & underneath I wrote something like this:

> Erected by the undersigned as a token of gratitude for the gift of water found in this basin & with the hope that future travellers will be able, as we have done, to replenish their bottles.
> Signed by all the party save Browne.

Taking up our line of march with renewed zeal, although above & below most of the time mist rested on everything, we kept right onward, still hugging the southern edge of the mountain where in some places we could look down at least a thousand feet. As will be seen by the plan, there was very little more of *steep* climbing, although there was a constant weary ascent, more or less rugged, until we saw just ahead of us what appeared the summit. I was sure that it was, and bitterly disappointed were we all when we found we were mistaken. The boys, however, all excitement, broke their military order & rushed to the spot. A small monument was there, but it was evident that we must go at least an eighth of a mile further & over an irregular collection of barren rugged rocks before reaching the apex. As the northern and southern sides of the mountain have come within a yard's space of each other it seemed somewhat like attempting to walk on the edge of a razor with 5,000 feet below you on either side. Besides, there were one or more awkward descents & ascents to be met with ere reaching the summit. We threw ourselves down to think about further progress. Meanwhile, the mist seemed clearing off. Long, rock-ribbed spires to the east and north presented their bald and sublime fronts to our view, & below we saw, as little green hills, the mountains we had traversed. Finally, Zeb said, "I am bound to reach the top. Who will follow me?", & he led the way. Jack and Tim said they had gone far enough. They could see the promised land but chose not to go to it. The rest of us followed Zeb, I bringing up the rear, & at 11 we were at our final resting-place, the craggy summit of Katahdin! And it amply repaid me for all my labors. It seemed a fitting climax to all our previous journeyings. Massive & Alpine

in its character, it struck me more forcibly than any view I had met with since leaving Switzerland. I wished I had not left my mother's bible on the apparent summit, where we had left knapsacks and everything of any weight in order to be perfectly free in our movements when jumping from crag to crag. I wanted to open it & find an appropriate passage for all of us. We found numerous names on birches & left our names, omitting, of course, Browne's, Jack's & Tim's. Zeb was enthusiastic & climbed high above our heads to the top of the monument itself. He reminded me of Uncle John's prophecy, that no Fremonter could reach the summit. A bad prophet was he, for lo! the only persons who lazily refused to ascend were the two Buchananites, whereas *six* Fremonters had reached the spot!

Having stopped twenty minutes or half an hour, & having plucked some moss and a delicate little flower that grew on a covered crevice, we commenced our descent with leaping hearts and refreshed bodies. We jumped from crag to crag like the Alpine chamois and soon reached the spot where we had left Jack and his companion. They were asleep under our blankets, under which they had crept to get rid of a shower that was impending. Before we arrived here we saw a beautiful rainbow *below* us, spanning from one crag to another, apparently a thousand feet below the spot on which we stood. Waking up the sleepers, we continued our descent. Bearing a little to the right, instead of keeping along the edge of the southern slope, we came across a clear, cold rivulet on one of the plateaux. Filling my bottle with it for Browne, we went rapidly onwards & without the least difficulty till we reached the craggy ascent of the morning. Here we slowly, but more easily than we anticipated, descended & in about an hour and a half reached our camp of the previous night. Here we found Browne, who had become somewhat anxious about us. We presented him with our offering of a draught of the mountain stream and his blueberries, which were most gratefully received, he having eaten scarcely anything for twenty-four hours. Having "taken a bite", we commenced our descent (we had previously erected a prominent monument to mark the spot) & soon reached the streams. Here we halted for half an hour to bathe, & then ahead again we went. The way was easy, comparatively speaking. Our spotted trees showed us our path & we *almost ran* a straight course & with only one or two interruptions to our career. At one time we "treed" a porcupine. We very expeditiously felled the tree & the little fellow waddled off very summarily. For myself I cared little for the chase. I staggered like a drunken man, tumbled over logs, and was altogether incapable of doing aught but deliberately to hurry forward. All the party were in a similar condition, & when we arrived at our birches were very ready to paddle to Camp Abol, where we found the remains of a cedar-

bark camp. Into that I threw myself & in about five minutes was dead asleep. I awoke but once and that was at the cooing of Tim as he came along in his birch from an unsuccessful moose hunting, which he & Zeb, accompanied by Frank, had taken after supper along the logans of Abol Stream. I forgot to mention that Jack had a fine fishing for trout near the mouth of the same stream & just opposite our camp.

Aug. 16. Our faces were to be turned homeward. We had provisions for two days more. The stream even in "dead water" ran at the rate of three or four miles an hour. The prospect was rather gloomy of being able to reach Rappagenus Carry in that length of time. We had occupied rather more than that in coming down with the current.

After breakfast we started, but it soon became very evident that in the actual condition of the river it would be impossible. Jack swore like a pirate, & Tim was cross, overheated, & nearly blown after *poling* up the river for half an hour. Paddling was of no use. Brute force of poles & skill in their use was evidently needed. I suggested to Browne to go on shore to consult. We did so & then called Zeb to our assistance. It appeared that the passage down was possible. Zeb was quite sure that we might avoid great falls, and although he had never passed that way he believed it possible & the course would be more rapid than upstream. The number of days before we could arrive at civilized parts he could not tell. On revolving all the circumstances, it seemed more feasible to try the unknown descent than to go up the river. To do that would wear out all. Accordingly, yielding to the necessities of the case, we turned about & at the request of Zeb I kept a sort of log of our course, which really presented all the interest usually attendant upon a voyage of discovery. This log I shall transcribe. If of no interest save to Zeb, skip it.

Aug. 16. Down river—stream rapid. One carry, short and boggy, at the right of some white water. At 12½ p.m. we had another carry ½ a mile long and on the right of some rough falls. Here Tim tells me that a man was drowned, who, when his brother desired to go down in a bateau, tried to persuade him not to do so. Finding him determined, he told him he would not let him go alone but he would assist. The "bat" was swamped and crushed. Both came near drowning. The prudent brother was lost. "A man", says Tim philosophically, "in dealing with these rapids, must not trust to his courage so much as to his caution."

Course S.E., 12¾. A broad beautiful sheet of water. After a sail till 1¼ p.m. we hear the sound of falls and we have a carry ⅓ of a mile long. Start again at 3 p.m., W. by S. In a few moments, after a little rough water which we run into, we push out into a wide, open lake. No opening perceptible or evident

course of a current. Moose logans abundant. Send off birches to reconnoitre. Jack, at a distance, sends to us the thrilling hunter's whistle. All hands put on board old *Nokomis*. Zeb and Tim start off together, in *Minnehaha,* for the spot where the game is. We, in the meanwhile, watch for currents and we observe the long sea-grasses turn faintly towards the south. Tim comes up with the game, finds it a large bear enjoying a bath, fires, does not hit, & Bruin gallops off into the woods! Tim & Zeb return & again we go E., searching an outlet. Some rough water but no carry, and we shoot into another placid sheet of water, course S. At 5 p.m. another rapid, divided by an island—smooth water seen beyond. Shore carry at left & then a short quick gut & another open lake. Admirable Zeb! how well hast thou guided us! Always prudent, yet not fearful; judgment most excellent as to the quality of the various runs of "white water".

¼ to 6. Course S. In 5 minutes two branches. Zeb takes left, bearing E. by E.S.E., and at 12 after 6 we fall into a little harbor just above another set of falls. A good carry at left for about ½ a mile & we think to encamp just above some rough water divided from the main falls by an island. Rainy evening—we wish to go ahead. Doubt of our exact whereabouts & of the character of the rough water below induces us to tarry & encamp. Weather wet—& no good camping ground. At length a tolerably good spot was found. Our enamel cloths were spread & the fire built. Then selfishness again marred the hours. The boys in their desire to get warm seats had fairly ejected Mr. Browne. In vain I suggested that some change must be made. It appeared that one was not in his right place & the others did not feel called upon to move. Finally I told them all that I was thoroughly ashamed of them. Whereupon a stampede took place, too late, however, for them to save their reputations as generous, manly youths capable of reverencing age or for me to preserve my equanimity, which I must allow had been severely tried during the day by finding how totally ignorant we all, even the guides, were of the course we were to take or the distance we had run.

Aug. 17. (Camp Allowance.) During the evening I learned that we had provisions for only one day more, and I felt that we must look at the possibility of a storm upon the lakes we were to pass through, and if such an event did occur we might wander for days without an exit from a lake ten to fifteen miles long. The first thing to be done, therefore, was to have the crackers divided and let each person know what he had got to depend on. Accordingly, at early dawn, I divided our crackers, which consisted almost wholly of broken pieces. Each parcel could easily have been held in a small pocket handkerchief. I laid the broken fragments out upon a napkin & called each one to take his portion. It was Sunday morning. Charley had asked me, the day

before, whether I should not rest over that day in camp. When I went to the river (a little distance from our camp) to arrange my toilette, I had taken out my mother's bible and selected certain passages for perusal after all but me and Browne had left the resting-place. Accordingly, after breakfast (of part of each allowance with some bean "swagan" which had been prepared by Tim), & when all but me had set out, I alluded to the conversation; said we were travellers on an unknown sea & perhaps far removed from human dwelling—that there was a possibility of our being lost over some fall or of wandering without food, and, therefore, I asked them to listen while on this Sabbath morn we read again, as I had read the week before, from my mother's bible. By the dim twilight I had chosen three passages, viz.: 4th Chapter of Proverbs, 133rd Psalm, and also 121. Of course I had felt anxious. The responsibilities of getting safely home the youths committed to me were accumulating upon me & I thought to gain strength and to give strength. Much to my surprise I had not proceeded farther than the 3rd verse of Proverbs, "For I was my father's son, tender and only beloved", when all the delightful recollections of my childhood & all the actual burdens resting upon me, together with the possibility of some fatal termination to our course, completely unmanned me. Tears choked me & I ceased. Finally I said, "My boys, the thought of my early days and of my sweet mother prevents me. Let us leave it." I then turned to that beautiful passage where the Psalmist describes "how good and how pleasant it is for brethren to dwell together in unity", etc., & I read with freedom. But when I suddenly passed to that sublime strain, "I will lift up mine eyes unto the hills, from whence cometh my help", etc., I felt the divine influence of the Almighty resting upon me! No fear or doubt stayed with me, but instead a holy trust! I committed my boys & myself to his keeping, & I arose strong as a lion & with full confidence in his guidance. With elastic step & bright voice I sprang to my feet, & crying out, "Come, boys, we are now ready for anything!", ran rapidly to our canoes. As a religious experience I would not for anything have missed the reading & the influence of that morn.

Our path led along swift & falling waters. Zeb reconnoitered & ran through safely. Tim & Jack shipped seas & wet all our luggage, & amongst other things all of Browne's allowance of bread. We soon, however, came out into a quiet and open lake at 6.10 a.m. Then, ah! golden sight! on our left, far to the southeast, we saw rising from amid the trees on the borders of the lake a little blue smoke! All hearts were gladdened as we passed the word from one birch to another. Zeb, leading us, steered directly for the point. We all hurried after him, and after twenty minutes' row we rounded a promotory in the lake &

were delighted at perceiving a bateau on the shore, & four men encamped nearby eating their breakfast. Never were we so rejoiced to see the face of human being. They were the first we had met for a whole week, and the meeting, so soon after our despondent moments, was doubly grateful.

They were a party that had come from below, "blueberrying & hunting", & consisted of two old and two young men. To know where we were, how to proceed, & to buy bread, such were our objects. Everybody asked questions & after half of the conversation had been gone over, Jack, who in *Hiawatha* had been half a mile behind us, came in to interrupt still more by his questions, all of which had been previously answered by us. I ordered silence & directed Zeb to get, *if possible,* a connected view of things.

It appeared, from the rather blind account of one of the older men, that we were in Ambejijis [Ambajejus] Lake, that we were to pass through Pemadumkook & thence to the North Twin Lake. Hugging the left shore of the last, we were to arrive at the dam at its outlet about noon. There we were to meet a carry ¾ of a mile long. Below, we should find Shad Pond, a small lake two miles long.[1] Keeping to the left of that, we should find a fine carry *road* from above Grand Falls over to the Fowlers', the highest settlement and resting on Millinocket River. From that place it would be easy for the canoes to run 12 miles to Nickerton [Nicatow],[2] whence it was 60 miles to Old Town, or 72 to Bangor.

All this seemed plain enough, but in the multitude of inlets, etc., I foresaw (what really happened) that, though the main points of the voyage were laid out, we should yet often wander from the direct path. Having learned our future path, I asked for some bread. Our informant seemed to doubt whether he could spare anything, as the party were bound farther up. He, however, finally gave half a loaf of very nice bread & for it he accepted half a dollar, though at first he refused it. Meanwhile, I had noticed the other old man "with large chest, large head and large abdomen", as Dr. Combe[3] describes one noble, intellectual &

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[1] Evidently Dr. Bowditch has here confused certain names in the directions given to him. Below North Twin and above Grand Falls comes Quakish Lake, not Shad Pond. The latter lies at the junction of Millinocket Stream with the West Branch, and so would have been reached by the party after, and not before, their passage of Fowler's Carry. (Information from Hubbard's *Guide to Moosehead Lake and Northern Maine,* 1882, and R.E.L.)

[2] The present Medway or "Midway", so named because the town is located halfway between Bangor and the north line of Penobscot County. When first organized as a plantation in 1852 it bore the Indian name of Nicatow (sometimes spelled Nickertow), meaning "The Forks", i.e. the junction of the East and West Branches of the Penobscot, and this name still survives as that of an island in the river at this point. (R.E.L.)

[3] This might be Andrew Combe (1797-1847), physician and writer on physiology and phrenology; his brother George Combe (1788-1858), phrenologist; or William Combe (1741-1823), author of *Dr. Syntax.* In all probability the first. (H.B.)

benevolent man, had wandered off, & pipe in mouth was talking with Tim, and occasionally he looked around at our boys. Finally, with the same calm manner he had pursued before, he walked up to the camp & said to our informant, "You can let them have something, certainly". He stepped to his own bucket & cutting off the biggest part of a huge loaf placed it in my hands. I thought I read in his kind eyes these words, "I must not let those fine boys starve even if I cut myself short". I offered him money but he turned from it with decision. Inwardly I said, "God bless you", and I certainly thanked him with my whole heart. He stood by nobly quiet on the shore as we took our leave. I shall never forget him, & subsequently, on our arrival at Nickerton, I learned that he bore the appropriate name of Howard.[4]

At 7 o'clock we were again on our way, steering due S. down the lake. We were very thankful that the weather was clear though the sun was obscured by clouds.

At the bottom of the lake we met two more men, one of them a fine old hunter with a dog as famous as himself. The animal, seeing us approaching, jumped to rocks jutting out from the shore, wagging his tail & greeting us like old friends. We appreciated the friendly omen, & after learning that the route explained to us was the correct one, we bade adieu.

The lake became more picturesque. Several large rocks arose from the surface of the water, giving greater variety to the scene.

7½ a.m. Course S.W. by W. Several rocks are seen, one of which resembles this rough draft. [Not here reproduced.] It was evidently, with its comrades, the points of a continuous stratum or strata coming up from the bottom of the lake, but pitched out of place by old convulsions of nature. A magnificent echo answered to our calls. Even five words were repeated—"How are you, old fellow?", etc. ¼ to 8. Entered a narrow gut with little current and large open lake beyond. By compass I saw we soon were veering towards the north and soon to N.W. I felt that there was some mistake. Zeb, however, was ½ a mile ahead. It was beautiful, however, to move along under a fair shore skirted with white waterlilies, & so we continued on. Finally, however, I sounded a halt. We drew up on shore & divided our bread. A small piece came to the lot of each in this way, whereas otherwise the whole would have been eaten by one or two under the so styled "digging" principle. I set all to fishing during our stay and we caught quite a mess of trout, perch and chubs. We started anew at 9½, course due S., i.e. decidedly retracing the steps we had taken and only veering a little to the south. We

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[4] John Howard (1726-1790), according to the *Century Cyclopedia of Names* (1901) "an English philanthropist, celebrated for his exertions in behalf of prison reform. . . . His labors led to many important reforms." (H.B.)

were still doubtful where the opening to the lake was, but we were thankful for our supply of fish. At 10 we discovered that we had made the circuit of an immense island, & thus had lost two or more hours of precious daylight. To quote from original notes: "We now steer E.S.E., a good course, I think, according to the general course of the Penobscot. Rocks and islands become more numerous. 10½ a.m. Rapid waters heard S.E. We approach; Zeb strikes upon a rock, but clears it and runs freely afterwards. The rest of us land & walk over a small lagoon island & ¼ to 11 are in a new and extensive lake several miles wide & indefinite in length."

This proved to be the North Twin. I proposed dividing our party; Zeb, as chief, should take the lead in *Minnehaha* & follow the centre of the lake; Jack should cruise along the right shore in *Hiawatha,* while old *Nokomis* with us on board was to examine the left or eastern side. The plan acted admirably. We coasted along slowly & finally doubled a low point of land behind which we found extensive "boom" arrangements. We sought for the dam. None visible. The current, however, set slightly in our direction, & the booms, larger than any seen before, evidently indicated this as an important spot for the passage of logs. While we were examining this inlet we perceived Zeb & Jack, unsuccessful in their endeavors, were coming towards us. We all met & landed 3 minutes to 12 near the booms & determined to follow the stream that opened there. Distant roar of waters was soon heard towards E. and current set strongly in same direction. At 20 minutes to 1 p.m. landed safely on the dam. An old log cabin sat picturesquely on the top of the hill overlooking it. We found it open & filthy enough. I put all hands to fishing. I caught a trout, perch & chub. Finally dinner was sounded. At 3 p.m. we started on our carry of luggage; the birches were unloaded. The scene was enlivened by a drenching shower, & we walked, I think, more than a mile, rather pleased with than disturbed by the rain. The party were separated & Browne was much alarmed. At length we were all again united on the borders of a quiet little lake called Shad Pond.[5] Here we again divided to explore, and Zeb, our quiet one, proceeded forward. Jack explored very thoroughly & spent much time. Finally, keeping snugly to the left bank, after about two miles we came within sound of the Grand Falls. Here we found an old ox track, which soon became choked. Going forwards, however, it ran down to another landing which Zeb, being unacquainted with, had not dared to come to. Leaving our canoes on shore, we loaded up and tramped amid blueberry and raspberry bushes along a *travelled* road, the *first* we had seen since leaving

[5] Cf. Note 1.

the foot of Moosehead Lake! At 5½ p.m. we arrived at Fowler's on the Millinocket Stream, and never were men more delighted than we were when we saw Dame Fowler's great warm cakes, fried fish, pork and eggs, with aplenty nice milk & sweet butter. We lived like fighting cocks. We fed the chickens with the remains of our allowance; for it was impossible for us to fail of procuring food as we were on the confines of civilization & our course was now constantly to bring us nearer to continuous settlements. At 8 p.m., guided by our genial host, we wended our way to the hay loft. We slept like kings on our blankets of hay and were awakened at the dawn by the loud crow of Chanticleer on the beam opposite us.

Aug. 18. Zeb and the rest went to get canoes. We remained writing until 9 a.m. when the guides returned. We set out on the quiet Millinocket, which winds its way from the lake of the same name into the Penobscot. It was delightfully peaceful to glide, without any roaring water, between banks fringed with blooming waterlilies. But soon (9½) we came to the wide and swollen Penobscot again and almost immediately we heard the roar of quick water. Zeb slowly attempted to proceed but his canoe was nearly swamped. Retracing his steps and having learned that there was quick water for five miles to Nickerton, it was decided that the canoes should be run while we should walk. Accordingly, we commenced. It was hard walking and we sighed for rest, but soon we swept along through the woods singing like a pack of young devils and presenting in our torn hats and pants and generally soiled aspect anything but the semblance of a knot of civilized beings. But music carried us forward. If we saw a hill ahead we all gaily surmounted it by means of "Yankee Doodle". On more plain lands we sang more sober tunes. Long live the powers of music! We arrived at the same time with our canoes, which, from Zeb's account, had met with rougher water than ever before. We bathed in the rapids and dined on fried pork at the house of a sharp visaged woman who nearly turned her milk sour by her pride.

3 p.m. Off again for Mattawamkeag after repairing birches. Civilization returns. Farmers mowing. Finally a nice horse and wagon seen. Clearings more frequent.

We still meet with rough water. Jack dashes on fearlessly and making my heart jump as I see Henry and Nat covered with spray as they drive among the boiling currents that eddy around the rocks.

The Penobscot grows wider; we meet other canoes; we hear the tinkling of the cow and sheep bells upon the shore. The current drops towards the sea at the rate of three or four miles an hour. A solitary sea-gull flies up along its course. We sit quietly drinking in the sweet influences of the hour.

6¼. Clear and bright after a violent thunder gust. Five Island rips in sight. By advice, we get out and walk, intending to pass on beyond the village. But Browne was delayed. Night came on and we stopped at the Five Island House.[6] Here we had our final talk with our guides and settled the amount to be paid and then *camped* on the outside of our beds in camp blankets and with every window open that would remain open. Nice fare, comfortable quarters.

Aug. 19. We all slept less comfortably than under the open air. For myself, I felt a want of breathing space. It is true that I had the infliction of a feather bed! Compare that with the soft yet elastic and fragrant bed of hemlock! We sighed already at finding the grip of even a border civilization was seizing upon us, and now that we were about quitting our "life in the woods", we cling to it with a tenacity that surprises us. Since leaving cravats and suspenders and taking to red flannel shirts at Kineo, we have so tasted of the deliciousness of being free to act ourselves, untrammelled by conventionism, that we find it rather irksome to think of the traces to which we must soon submit ourselves.

As we were determined, if possible, to reach Old Town before 7 p.m., which would require a paddle and walk of *forty-eight* miles (!) we arose at ¼ past 4, took breakfast and bought a cold dinner so as not to be obliged to stop on our way, and at 5.25 were in our birches for our last day's travel. The shores showed marks of approach to settlements and nearness to the seashore. Few extensive woods, and banks broken, sandy and higher. No such long sweeps of deep green, reaching far into the water, as we had for days been accustomed to see. The houses and clearings, though distant perhaps five or six miles from each other, seemed near neighbors to us, who for days had not seen a house or met the face of a single human being. Twenty-four hours had made a wonderful change, and as we glided down the broad and smooth, and at times very shallow river it became every hour more marked.

At 7 a.m. we see sheep feeding in a park-like looking spot, i.e., extensive woods but cleared up from underbrush, so as to be smooth and green as a carpet of richest velvet.

At 7.20 arrived at village of North Lincoln. Soon perceive the Indian houses beginning to show themselves. They are the remnants of the Penobscot tribe and occupy, under the guardianship of the State, all the islands above Old Town where is their principal settlement. This day (to help to paddle *Hiawatha,* who I am sorry to say had shown but few of the rapid powers of locomotion possessed by its namesake) I had passed with Nat in

[6] Probably near the present town of Winn. (W.S.H.)

Jack's birch. Jack told me that the tribe still have their Pow wows as formerly at their governor's house. This worthy they choose biennially, and political partyism prevails among the Red men as with us. Jack attended one of their gatherings. It was a drunken, loud and boisterous dancing and shouting party kept up all night. There are about three hundred whose names are registered and who receive a gratuity of four or five dollars annually from the State. An agent of Old Town manages the whole matter and makes a speculation out of it! (1884)[7] A bounty is offered for all wheat and grain raised by the community. Thus they are turned to husbandry. The tribe has likewise the right to shoot game anywhere in Maine. Their chief business, however, is the making of baskets, etc.

At 12¼ after passing some rapids previously, we arrived at our great stumbling block, viz., the Piscataquis Falls; i.e., falls just at the junction of P[iscataquis] with Penobscot.[8] A mysterious answer had usually been given to us when asking about the ease of their passage. "It is very easy for those who know the channel." But we found, as in several instances before, that our experience was worse than the anticipation. We landed, and I went to get a pilot, but he was absent from home. Providentially, however, two men came along in a bateau and they offered to guide the canoes. Accordingly, we undertook to tramp along shore. With great difficulty the birches were also to follow their guides. Finally, the whole party came to a halt. It seemed but one unbroken mass of foam. Zeb was more than usually watchful. I learned, subsequently, that he protested somewhat at attempting the passage, but proposed a short "carry". The "bat" finally started and got along with much difficulty. Jack burst forward out of the ranks and went ahead striking more furiously than ever before. Next went Tim, and he suffered also, but both finally reached the bottom. Zeb still remained. He had resigned his pole to one of the "bat's" men and so was ill provided for success in a rapid stormy current. He shipped only rarely at first, but finally stranded on a rock, to which he clung until the bateau poled up again and released him. Then, with pole in hand, he descended safely. At the bottom all birches were drawn up to repair breaches.

Hastily eating our lunch, we again floated on. The pull became very laborious. Our backs groaned from our long cramped position. We, therefore, declared we would walk four or five miles on shore. Accordingly, we landed and I had a delightful con-

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[7] This date in parenthesis, added by the author, seems to indicate that there was a later revision of the manuscript, in which the preceding remark was introduced. (H.B.)

[8] Site of the present Howland. (W.S.H.)

versation with Browne about Greek tragedy, school-keeping, Dr. Follen,[9] etc. The boys even seemed to listen with pleasure, and the hours passed so very rapidly we were surprised when our tramp was finished. Unfortunately, we became separated from our canoes and they from one another, so that much precious time was lost. Middle of p.m. we were on our way again. Pass numerous islands and saw several habitations. We were rapidly approaching the full blast of business. At 6½ p.m. we hear the sound of the car whistle coming from Bangor. We strain every nerve to arrive soon enough to leave at 7 in the return cars. Impetuously we went on. The birches sweep along, each carrying a bone in its mouth. We reach the island of Old Town, on one side a roaring cataract, on the other a rapid but more quiet current. We speak to men on shore, and they say to us "Go ahead, you are right". All order is lost. *Hiawatha* with his three paddlers tries hard to keep up with *Minnehaha* with Frank and Zeb. We think we see the locomotive smoking, and listen, and perceive the car bell sounding. Men and boys, seeing our interesting pursuit, gather on the shore. Quick water comes. The waves dash over us. All thought of danger is lost. We have ridden over worse storms and so we blaze away. I finally, panting, reach the shore—*too late*. The cars we had seen were imaginary ones! Jack's smoke of a locomotive was the chimney smoke from a rum hotel! The cars had been gone twenty minutes!

We drew up our birches, and took our packs amid a crowd of men and boys all curious to know where we came from. And surely we were a sorry looking set. Torn hats & caps, toes out of shoes, rips in pantaloons, which last from several soakings in mud presented anything but a neat aspect. Most of the older ones bore our Kineo beards upon our chins. Marshalling our party, I took the lead to the above-named rum hotel. The landlord eyed us askance & seemed doubtful whether to accommodate us or not. Subsequently, on finding from our guides who we were, he was soft-spoken as the gentlest woman. The supper, however, was good. The beds we cared little for, as we still camped on their outside in our blankets.

After supper we all went out to buy shoes, shirts, etc., & refit for fashionable life. Here we paid our guides and gave several commissions to Jack to go to Chesunkook & Kineo & send our trunks back to Boston. To Zeb in commendation of his extreme kindness, his sagacity, etc., we presented *Minnehaha*. To Tim we

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[9] In all probability this was Karl Follen (1795-1840), according to the *Century Cyclopedia of Names* (1901) "a German-American clergyman and writer. . . . He was driven from Germany, and finally from Switzerland, on political grounds, and in 1830 became professor of German at Harvard College. He perished in the burning of a Sound steamer." (H.B.)

gave some of our camp apparatus. They all seemed sufficiently satisfied, though I am sorry to say somewhat boorish. . . .

In conclusion, I will say that having travelled thousands of miles in the fairest portions of Europe, having listened to the still voice of Nature as it speaks to my own heart in the highlands of Scotland with Burns & Scott for my companions, in the mountains of Switzerland with their Alpine grandeur, along the fair fields of Normandy, & finally amid the ruins of ancient & modern Italy, at no time & in no place & under no circumstances have I heard that voice sound so solemnly or so sweetly as during this voyage down the Penobscot. It comes up before me now like the cadences of a great choral hymn. Thanks be to God for this richest experience of my life! Thanks be to him that the memories of it will always form a part of my future being.

Hampton Falls,
Aug. 25, 1856.

Appendix

Apparatus needed for such an excursion:

A thick strong old coat; and have eight or ten pockets inside or outside with strapped or buttoned covers.

One change of everything.

No cravats or suspenders.

A thin soft old hat or cap.

No liquors except one pocket pistol of brandy.

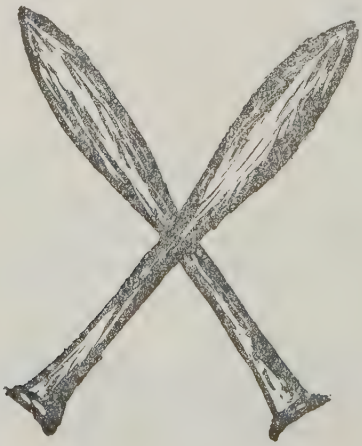
All have tin cups and a knife, fork, spoon and plate in one pocket.

A strong water-tight knapsack.

Camp blanket; two enamel cloths and loops (6 or 8) at corners and sides for night and also for fastening around neck in case of rain.

For food take compact articles which by addition of water will become bulky.

Above all, take each an abundant supply of *self sacrifice* and leave *interest* behind in state where it ought to be left.



BLOOMER GIRL OF THE ROCKIES

by Weldon F. Heald

The first woman to climb to the 14,110-foot summit of Colorado's famed Pikes Peak was Julia Archibald Holmes, on August 5, 1858. History tells us that she carried a 17-pound pack while that of her husband was 35 pounds. In them, to the top of the Rockies, went food, clothing and equipment, letter-writing materials and a copy of Emerson's *Essays*.

This Bloomer Girl of a century ago must have been well worth knowing. For she was emphatically a "Modern Woman" long before her time and, although only twenty years old when she ascended Pikes Peak, she was already a seasoned pioneer.

Born in Nova Scotia, Julia Anna moved with her family to Massachusetts in 1848, and six years later to Lawrence, Kansas. There her parents, John and Jane Archibald, actively aided the anti-slavery cause. Those were the days of fiery John Brown of Osawatomie and the bloody Kansas-Missouri border war. So Julia knew violence, hatred and bigotry, and also the selflessness of fighting in a just cause.

At nineteen she fell in love with a captain of the Free-State Rangers named James H. Holmes, and married him. However, perhaps here Julia demonstrated her characteristic independence. For an old-time booklet, *Southern Colorado,* published in 1879 at Canon City, states that "Holmes was the name of her 'affinity'—they being religiously or conscientiously free-lovers and were married after the style of their own belief". But it was usual in those days to slander progressive women, so this is probably malicious rather than accurate. At any rate, James was a dashing and adventurous young man—enough so to turn the head of even a Bloomer Girl.

In 1858 gold was discovered in the Colorado Rockies, which triggered the so-called Pikes Peak Gold Rush. Within the following year and a half 100,000 people trekked westward, steering their courses toward the lofty, snow-crowned "Sentinel of the Plains". The gold fever attacked the young, newly married couple and they joined the well-known and now historic Lawrence Party to seek their fortune in the western wilderness.

Julia, by then an ardent champion of equal rights, wore the bloomer "reform dress" of the suffrage movement. "I am perhaps the first woman", she wrote, "who has worn the 'American cos-

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Weldon F. Heald, a member of the Club, the Explorers Club, and several other organizations devoted to climbing or conservation, has traveled in all continents and climbed in North America, Europe and Asia. For thirty years he has explored the mountains, forests and deserts of our Western states. He is co-director of the Southwest Writers' Workshop and Conference at Arizona State College, in Flagstaff, and has contributed many articles to Appalachia.

tume' across the prairie sea which divides the great frontier of states from the Rocky Mountains."

Only a brave and determined woman would have donned such radical dress in those times. Unwomanly, indecent, immoral, even ungodly, were a few of the milder words used in almost universal condemnation. The costume was originated by Elizabeth Smith Miller and adopted in 1849 by Amelia Jenks Bloomer, dress reformer, temperance worker, and women's rights advocate, after whom it was named. However, unlike the bloomers of later years, it consisted of a short skirt over loose trousers, which were gathered round the ankles. Similar garb was worn in Europe as early as 1839 by Henriette d'Angeville, second lady to climb Mont Blanc, and her picture indicates that it was considerably more fetching than Capri pants or the modern feminine ski outfit.

On the trip West Julia not only wore bloomers, but further demonstrated the independence and iron resolution of the emancipated female by traversing the plains on foot, beside an ox-team, for a distance of about ten miles a day for five weeks. Because of her lofty destination atop the Rockies, one hopes that her prairie schooner bore the defiant words: PIKES PEAK OR BUST!

Upon their arrival in Colorado, the climb itself took six days. Besides the Holmes there were George Peck and O. C. Miller of the Lawrence Party. The two men had scaled the peak some days before and so acted as guides. The former commented, "Mrs. Holmes wore bloomers in order to travel over the rocks and brush to better advantage and showed her good sense in doing so, as there was no trail and the going was rough". Strangely enough, however, Julia's journal makes no mention of their two companions on the climb.

She gives a lively account of fording ice-cold streams, getting lost among huge boulders, and toiling up endless slopes. But her enthusiasm never flagged. She seemed to enjoy every minute of it and wrote glowing accounts of the many wonders she saw—the trees, wildflowers, rocks and magnificent panoramas.

The party made headquarters for a couple of days beside a gushing spring in a little wooded glen near timberline. "Snowdell", they called it, and Julia wrote: "We think our location grandly romantic. . . . Eastward, we can look on a landscape of Kansas Plains, our view hemmed only by the blue haze of the atmosphere, and extending perhaps two hundred miles."

The two Holmes left Snowdell for the summit of Pikes Peak early in the morning of August 6, "taking with us nothing but writing materials and Emerson". When they reached the topmost point, both proceeded to write letters to friends, using a flat rock for a desk. "I have accomplished the task which I had marked out for myself", Julia wrote to her mother, "and now I feel amply repaid for all my toil and fatigue. Nearly everyone tried to discourage me from attempting it, but I believed I should

succeed; and now, here I am, and I feel that I would not have missed this glorious sight for anything at all.

"In all probability, I am the first woman who has ever stood upon the summit of this mountain and gazed upon this wondrous scene which my eyes now behold."

But it was bitterly cold, and numbed fingers soon put an end to letter-writing. However, before the couple left the summit in a blinding snowsquall, Julia read aloud the lines of Emerson:

A ruddy drop of manly blood,
The surprising sea outweighs;
The world uncertain comes and goes,
The loser rooted stays.

Snow was falling fast at "Snowdell", where the Holmes picked up their packs, and they hurried on down the mountain. Night was spent at a lower and warmer altitude and the next day at noon they arrived at their wagon-train camp, near the present site of Colorado Springs. "We found some excitement existing", Julia recorded, "regarding an attempt the Indians had made the night before, to drive away the cattle belonging to the train."

The pioneering Holmes did not find a gold bonanza—neither did they "bust". After settling in New Mexico for awhile, where they both taught school, James's anti-slavery activities were rewarded by an appointment to the Frontier Guard in Washington, which personally guarded President Lincoln. Then he returned West in 1862 as Secretary of the Territory of New Mexico. Julia while there was territorial correspondent for the *New York Herald.*

After this, James fades from the connubial picture. According to relatives, Julia divorced him in 1863 and we find her in Washington, D. C., where she became increasingly prominent in the women's rights movement. In fact, it is reported that she gave an eloquent speech on the equality of the sexes at the first women's suffrage convention held in the National Capital in 1869. During this period, she was employed by the Bureau of Education and had the distinction of being one of the first women Federal office-holders in the United States. She also gained considerable reputation as an author and poet. The date of her death is given as January 19, 1887, at the age of 48.

One can almost see Julia as she stood on the summit of Pikes Peak a century ago in her rather attractive bloomer costume, flushed with the thrill of accomplishment. Perhaps, as she looked out over the smashing 60,000-square-mile panorama of mountains and plains, the urge to write first seized her. "How I long for the poet's power of expression", she lamented in an on-the-spot letter to a friend, "so that I might give you some faint idea of the grandeur and beauty of this scene."

Yes, Julia Archibald Holmes, Bloomer Girl and Modern Woman of the Nineteenth Century, must have been well worth knowing.

FROM THE SKETCHBOOKS OF GEORGE A. FLAGG

George A. Flagg of Malden, Mass., and his brother Charles, of Boston, made quite a reputation for themselves as active and enterprising White Mountain climbers at the beginning of this century. Both joined the Appalachian Mountain Club in 1900, but their major expeditions were carried out by small parties of their own devising, in many cases by a quartet consisting of the two brothers, Mrs. George A. Flagg, and Charles M. Cox of Malden. The first notable achievement of this quartet was an ascent of Mt. Washington on July 11-12, 1902, via the Great Gulf, which had apparently not been traversed throughout its entire extent up to that time, although it had been entered both from above and from below. Flagg described this trip as follows:[1]

> We started from the Glen about noon. We headed almost directly toward Mt. Madison, hoping to hit the West Branch of the Peabody River. We followed the old trail, although it was of very little use as a path and we should hardly have known it as such had we not occasionally found the old signs, "Glen House one-half mile", and so on.[2] At the end of 1¼ miles of not difficult travel we struck a good-sized stream which we took to be the West Branch. From this on it was simply a succession of climbing up and climbing down among windfalls and rocks. We finally crossed to the other side, went over a ridge, and struck a much larger brook, which proved to be the true West Branch. The first one was not on the map at all; in fact, we found many brooks which were not indicated on the map. By nightfall we had gotten up off the flank of Mt. Adams, where we pitched our 7x7 A-tent in a sheltered place and passed a comfortable night in spite of the cold.
>
> [Next] morning we made good headway, following the river until about 11 o'clock, when we went up on the bank and renewed our struggles with windfalls. We came within an ace of going up the ravine between Jefferson and Adams. The cliffs looked just like the headwall....
>
> The sides of the Gulf are very steep, especially at a point where a spur runs down from Mt. Jefferson and another from Mt. Washington, making a narrow cut. About 4 o'clock we came in sight of the patches of snow on the headwall and struck to the left, finding pretty good going until we reached the scrub. Here it proved a terrible struggle and we were fully an hour and a half going half a mile, cutting our way with an axe to some extent but depending largely on the strength of our arms to make progress through the terrible jungle of dwarf spruces. At last we reached the rocks and were gratified to catch a sight of two telephone linemen working a short distance above us. We struck the road near the seventh mile post and reached the summit about 6.30 p.m.

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[1] *Among the Clouds*, July 15, 1902.

[2] This was apparently the Osgood Path, built in 1881 up to Spaulding Lake but in disuse after the burning of the Glen House. (F. W. Kilbourne, *Chronicles of the White Mountains*, 347-8.)

Mrs. Flagg, who was certainly the first woman to make this trip, "came through in fine shape, with her dark brown walking skirt as fresh in appearance as if she had but just started", whereas "it was a dilapidated appearance that the men of the party made after their struggle through the scrub, for one had entirely lost the crown of his hat and another needed the aid of numerous pins to keep his garments together". To her husband's account Mrs. Flagg added, from her own point of view:

> Over the rocks and log jams of the river bed we climbed, crossing and recrossing many times in the hope of finding easier traveling.... Occasionally we found places where masses of logs were piled twenty-five feet high across the stream, making a barrier that we were obliged to climb over. Sometimes it was treacherous footing. A man could crawl over on his hands and knees, rather than walk a log at a dizzy height, but being a woman, in a woman's garb, I could only look straight ahead and follow my husband.[3]

In August of the following year the same quartet pushed their way up the valley of the Dry River and the headwall of Oakes Gulf.

> Left the train at Willey Station and went around to the right of Mt. Webster, and as soon as we struck the old abandoned railroad we followed that up. We found all the bridges that used to stand there washed out and most of the bed of the railroad overgrown with brush, except where the fishermen have kept a path open. This brought us along pretty well until we had gone two miles or so, when we struck a gorge which was almost impossible to cross on account of the water being so high. It took us an hour and three quarters to proceed perhaps not more than fifty feet. It is called the "Dry River", but we thought it should be called "Wet River". One or two of the party fell into the brook at some of our many cross-overs. We reached the end of the railroad just at nightfall and pitched camp. Showers came on, causing quite a little bother. It was about 8 o'clock before we got properly settled down for the night.
>
> We left camp early [the next] morning, about 8.30, still following the shore of the river. The logging road was pretty good for about a mile, but after that it was filled up with windfalls, tops of trees, rotting logs and every kind of debris under the sun—simply impossible to stick to it part of the time. We passed a most magnificent waterfall, which is not on any map....
>
> At about 11 o'clock we reached where the cuttings ended. We then made pretty good progress until we got into Oakes Gulf. Coming up the floor of the Gulf wasn't bad, but when we struck up towards the Refuge[4] the fun began. Where we came out the headwall was practically vertical; in fact, we were afraid that we would start a slide at any time. The underbrush was so thick that we had to cut our way through with axes. For about fifty feet we were obliged to

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[3] *Boston Sunday Journal*, September 7, 1902.

[4] This is the small wooden refuge hut built by the A.M.C. on the Crawford Path, between the Lakes of the Clouds and the summit, after the death of Curtis and Ormsbee in 1900. See photo in APPALACHIA XXXII, December 1958, 165.

pull ourselves up by means of little twigs. Finally we got up where we could look across and see the rocks and ledges protruding above us. With not more than five hundred feet of that scrub to get through it took us an hour and a half to reach the end. In some places we had to walk on top of the dwarf trees and underbrush, while in other places we cut our way through.

We reached the Appalachian Refuge at about quarter of six, where we rested for some time, and then came to the summit by an air-line route. . . .[5]

Four years later the two Flagg brothers, with two other men as companions, repeated their ascent of the Great Gulf, with variations, and called it the toughest tramping trip they had ever taken in the White Mountains.

They started from Randolph Monday morning, following the Randolph Path until under the cone of Jefferson, and about 11.30 a.m. struck down into Jefferson Ravine. They were obliged to use a 60-foot scaling rope in many places, and passed or peered into caves made by the huge conjoining boulders. Several they entered a distance of 15 or 20 feet. One boulder "as big as a house", supported by nothing but two small rocks, they dared not pass below—the jar of footsteps might set it going. Under one of the old slides they heard the roar of a waterfall—a veritable roar, not a sound of gently running water.

They passed all Monday afternoon in getting round the spur of Jefferson and down into the Great Gulf, which they entered nearly opposite the Halfway House. In following the West Branch up for about a mile they encountered all the rough traveling they desired in their then fatigued condition. The easiest way to get over the logs, they found, was to tumble over. Camp was made at 6.30 p.m. at the base of several waterfalls, three of them at least 20 or 30 feet high and still unnamed. They had been traveling twelve hours, with packs varying in weight from 24 to 30 pounds. To say that they slept soundly does not fully describe their night's experience and condition.

At 8 a.m. Tuesday they started directly up the floor of the ravine toward Mt. Clay. Their path lay over all sorts of boulders and through thick scrub spruce as formidable in roughness as any they had encountered. But on arriving at the headwall of the ravine they chose a difficult point of ascent, coming up between Clay and Washington practically on hands and knees. One of the party would thus climb ahead with the rope, letting it down to draw up the knapsacks and blankets. There were places where the ascent would have been impossible without the rope. The dangers from loose stones were not to be ignored, and many were the large rocks sent tumbling down the mountain. C. S. Flagg's knapsack took a downward shoot, and its recovery meant the doing over again of a few rods of perpendicular work.

After a three hours' struggle the top of the headwall was reached and the party gathered at the Appalachian platform [on the railway, near the Gulf Tank]. They arrived at the summit at 12.30, all in good condition but unanimous in the statement that they were satisfied to let the Great Gulf alone for a pleasure trip hereafter.[6]

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[5] *Among the Clouds,* August 17, 1903.
[6] *Among the Clouds,* August 14, 1907.

For many years George A. Flagg kept a sketchbook in which he depicted the more humorous aspects of his climbs and of life in the White Mountains at that period. Through the courtesy of his daughter, Mrs. T. N. Foynes of Melrose, Mass., we here reproduce a selection of these sketches.

LADIES FROM THE RAVINE HOUSE
Going to the Pond of Safety

PATH ON MOUNT MORIAH

J. RAYNER EDMANDS AT 74

NICE WALKING

THROUGH THE JEFFERSON RAVINE

CAMP IN THE GREAT GULF

As our City Guest Expected

STAGE TO ERROL

And as it Actually Was

CAMP AND TRAIL EQUIPMENT

Part I

by Stanley W. Stocker

As a camping man and a teacher of camping students, I have for many years been interested in equipment for camp and trail. The question of equipment is imperative, and intriguing. I should like to share with you some of the information I have gathered on my personal trips and on trips with students at Springfield College. Although I may omit some excellent articles, those I shall mention have been fully tested and the sources of this equipment studied.

As you have noticed, camping and camping equipment have become Big Business. The Do-It-Yourself trend has so progressed that camping for the millions is now a fact. It is reasonable that manufacturers should seek to fulfill the needs and satisfy the growing interest of people. But, more than ever, to choose among the mass of equipment which floods the market demands discrimination. The buyer and user must discount the sales talk and determine for himself, according to his particular needs, his own "ideal" equipment.

I cannot emphasize enough the wisdom of thoroughly testing equipment *before* relying on it for any sort of trip. Failure to do this often results in discomfort, at the least. For example, I purchased a new-model tent with special extension poles for a trip through Canadian bush country. One night "the rains came" and neither my companion nor I could find any way to tie off the front of the tent so as to keep the rain out. Although this particular model has been withdrawn from production, some of the tents are still on the market.

At another time, we purchased a metal packboard which appeared to be very well designed and made. A year ago February it went on a trip to Tuckerman Ravine with my winter camping class. Despite the fact that the total weight of the pack was under forty pounds, one of the snaps had broken completely off before the end of the first day.

At the risk of repetition I say again, "Buy in terms of your own needs. Thoroughly test this equipment before you depend on it."

In some cases you will find imported equipment of fine craftsmanship. However, in these articles, the discussion is pre-

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Stanley W. Stocker, now Camping Survey Director of the American Camping Association, Martinsville, Indiana, is writing a series of articles for Appalachia on equipment and supplies. The first of the series, "Foods for Trail and Camp", appeared in the issue of June, 1958.

dominantly of domestic products, for I have not had adequate opportunity to test as many of the imports as I should have liked.

When purchasing, you will find a spectrum of price variation for identical articles produced by the same manufacturer. It has amazed me to discover these wide retail-price ranges. (Incidentally, as a consumer you must be cautious. Unfortunately some of the catalogue descriptions are incomplete and/or inaccurate.) Postage is in addition to prices unless otherwise indicated.

This evaluation of equipment is based on usual trip and camping needs, rather than the special requirements of high-altitude or go-light trips.

Tents, sleeping-bags and packs will be discussed in Part II, to be published subsequently.

Explanation. The Arabic numerals in parentheses refer to the sources from which the item may be obtained, as listed at the end.

Tools

Hudson Bay Axe. There are many manufacturers of this item producing many different head weights and handle lengths. I refer to the Collins Hudson-Bay-type axe with a 2-lb. head and a 27-in. handle. This represents a really usable axe that gives maximum cutting area with minimum weight of the head. (5, 7, 9, 10, 15). From $4.00 without sheath to $5.75-$6.95 with sheath.

Camper Saw, Metal. This is an excellent saw with reversible blade, well worthwhile for general use (car tripping and most other trips). 32 in. long. (8). $3.65.

Folding Pack Saw. A terrific item. Stands up well and is really usable for quite heavy work. Blade is encased in frame of cadmium-plated steel. Closed dimensions, 25½x1⅜x16 in. Opens to 10x17 in. Weighs 2¾ lb. (7). $7.00, including canvas case.

Swedish Folding Saw. 14-in. charcoal-steel blade that folds into wooden handle. Weighs 11 oz. Good for one man and light use. (2). $3.00.

Sheath Knife. There are as many ideas as campers about what is good here. Try to get one of the 6¼-in.-blade Swedish steel knives from a Hudson Bay trading post. I feel they are tops even with their wooden handles. $.85 and $1.25.

U.S.A. Folding Bolo-Machete (surplus). Good for brush trimming and cross-country hiking where there are no trails. Comes with a leather holster and a whetstone. (17). $2.50.

U.S.A. Folding Shovels with covers. The folding shovel that is so handy for trips, car, home. (4, 6, 7, 11, 17). $.70-$1.55.

U.S.A. Shovel and Pick Combinations (new type). These are a combination of the old pickmatic and shovel and have many uses on camping trips where weight allows. (4, 5, 6, 11). $1.98-$2.55, with cover.

Pocket Tool Kit (combination wrench, pliers and screwdriver, all in one). Weighs 4½ oz. Extremely handy, especially on canoe trips. (12, 13). $2.64-$2.95.

Cooking Equipment

U.S.A. G.I. Stove (not the Coleman pocket stove). These small stoves, which stand up very well, are rather difficult to locate. Tank holds 1 pint. Collapses to fit 4½x7-in. metal container. Weighs 2 lb. (20). $5.95 postpaid, *used* but guaranteed in perfect condition.

Turm-Sport Alcohol Stove. Import from Germany that stands up very well. A denatured alcohol stove that is *not* under pressure. Cleans very easily. Half-pint fuel gives 2-3 hr. of steady heat. (1, 6, 7, 20, 23). $5.50-$9.95.

Bernz-O-Matic Single-Burner Propane Stove. Uses propane cylinders and is excellent for low temperatures (40°-60°F.). 12 in. long, 5 in. wide. Weighs 5½ lb. Tanks weigh 2½ lb. and can be removed without loss of fuel. (4, 5, 6, 8, 9, 11, 23). $8.70-$11.95. Extra fuel (not mailable, by express only). (5, 9). $1.50-$1.89.

Prepo Picnic Stove, single burner. The first models supplied adequate protection to prevent wind from blowing out flame. This is a good stove if you can locate the original model. Weighs 6 lb. (7, 11). $5.95-$7.25.

Borde Burner and Metal Case. A Swiss import that stands up remarkably well and gives extremely concentrated heat. One filling burns 40-55 min. Burns alcohol, kerosene and white gasoline. Weighs 8 oz. Case measures 6x2¾x1¾ in. (2, 10, 13). $4.50-$6.95 without metal case to $8 with case.

Enders Fuel Can. Comes in pint and quart size. Has a spout for easy non-spilling pouring. (16). $1.60.

Aluminum Fuel Bottles. Threads are cut heavy. Has a gas-proof gasket. I have carried gasoline in one of these bottles for over 10 years and no leaks yet. Ideal for carrying stove fuels. (13). 1¼ pint, weighs 4 oz. $1.65, postpaid. 1 quart, weighs 5 oz. $1.90, postpaid.

Universal Fuel Pump. German import (Enders). A 30-in. tube with built-in brass filter that is very light and easy to handle. (11, 16). $2.80-$3.95.

Conversion Unit (liquid gas to LP fuel and vice versa). Easily detached and convertible either way. Good idea to convert your gas stove to LP fuel cans on short weekend trips for convenience in spite of cost (liquid fuel being the cheaper). (5, 11). $2.98-$3.95.

Plastic Funnel. Polyethylene. Very handy. Fitted with screen mesh. Weighs ½ oz. (1). $.25.

Reflector Ovens. Good to have along if weight isn't a concern. (a) Wire grill, 10x15½ with bake pan 8½x14 in. This unit folds to 13½x16x-1⅝, with sides. (9). $9.75. (b) Baking tray is 10x12 in. Folded size 12x14¾x¾ in. No sides. (1). $6.00. Use caution here since each type of oven seems to vary greatly in size. Check bake-pan size and whether there are sides. Although you can put on aluminum-foil sides when the wind is blowing, it's much easier to have them there.

Aluminum Griddle with legs (Paulson). The best griddle that I have ever used. Can be kicked in water directly from fire and no problem. Legs allow low or high adjustment. (22). $10.35, postpaid.

Metal Nesting Grate Bars (Trailite). 2 galvanized steel channels 15 in. long in a cloth bag. Weighs 5 oz. (14). $.85.

Cook's Tongs. Should be part of every camper's equipment. Worth it just to prevent burned fingers. Spring squeeze handle 6¾ in. long. For any type pot. Weighs 3 oz. (7). $.75.

Pot Chains. 18-in. for small pots. (9). $.25. 48-in. for large pots. (9). $.75.

U.S.A. Mountain Troop Cook Set. Two 3-qt. nesting kettles with fry-pan lid. Weighs 23 oz. Nested size, 8 in. diameter, 4 in. high. Most are aluminum, with a few having a stainless steel fry pan. Kettles have bail handles. (1, 3, 5, 6, 10, 11). $1.69-$2.95.

U.S.A. Waterproof Match Boxes. Made of OD colored plastic. (4, 6, 7, 11). $.19-$.25, postpaid.

U.S.A. Can Opener, individual. One of the handiest items you can carry. Very small and compact. (10, 11, 13). About $.10, postpaid.

Camping Accessories

Coleman Single-Mantle Gasoline Lantern. Holds 1 3/5 pints, which will burn 8-10 hr. 12¼ in. high. Weighs 3¼ lb. Gives off about 200 candlepower. (5, 6, 10). $9.95-$11.95.

Coleman LP Gas Lantern. Single mantle. Not too effective at temperatures under 50°F., since the gas pressure drops with the temperature. Fuel can will lose all gas if removed before empty. Weighs 2½ lb. with fuel. (3, 5, 6, 7, 8, 10). $7.77-$8.95.

LP Fuel, Coleman. (4). $.49. 6 for $2.75.

Fiber Lantern Case. Has a large coil spring to keep the lantern in place. (15). $4.45.

Kamp Can. Metal can for single-mantle lantern storage, carrying and general protection. (5, 23). $3.95.

Candle Lantern. 3 mica windows. Spring for automatic feeding of candle. 1¾x4½, folded. 8 in. long when fully extended. Weighs 2 oz. (10, 14). $1.45-$1.59. Candles for the above should be of high melting point, otherwise they will melt and fall out of the lantern. (10). $.04 each or 100 for $3.50. (Excel Brand.)

Stonebridge Candle Lantern. This is U.S. Civil War surplus. Heavier than the imported candle lanterns. I like these very much and carry one on all trips except go-light ones. 10x4¼x4 in., open. Folds flat. Uses regular 1⅛-in. candle. Candle cannot melt and slip out of spring. (6, 11). $.99-$1.25, postpaid.

Electric Lantern, Burgess. Trade-name of Radar-light. Has a plastic lantern top with bail handle. So designed that a dead battery will not leak and ruin the light unit. Available in both copper and chrome finish. (5, 6, 11). $6.75-$7.50.

Canvas Water Bucket. There are many types available, this being the best I have used to date. Spout and top with waterproofed covers to keep out dirt as well as to prevent the water from splashing. Holds 12 qt. Leather carrying strap. Weighs 11 oz. (2). $2.95.

Plastic Wash Basin. Heavy plastic that folds into a very small and light bundle. Good for washing clothes or self. (2). $1.00.

Army Canvas Folding Wash Basin. Weighs 6 oz. 12-in. diameter, 3 in. high when open. (4, 5, 6). $.39-$.60.

Packing

Plastic (Polyethylene) Rolls. Now sold in many areas, especially by farm suppliers, in rolls of various size and thickness. You can make your own food bags, ditty bags, tarps, etc. I recommend using .004 gauge to be sure you have adequate thickness. For specific uses it can be lighter or heavier (e.g. for ground cloths). Can be sealed by using a regular iron and a piece of aluminum foil folded over the plastic or with a heat sealer.

U.S.A. Waterproof Rubber Bags. 16-in. diameter, 30 in. deep. Tie tape around top. Excellent for waterproof storage of sleeping-bags or other valuable gear. A must for canoe trips where there will not be many portages (although they can be lashed on a packboard without much bother). (6, 7, 10, 20). $.95-$1.50, the last figure postpaid.

Polyethylene Bags. All can be heat-sealed by using iron and piece of aluminum foil. Specify .003 or .004 gauge for making the most effective bags. .002 will work but doesn't stand up too well for heavy use. (10). Five sizes, from 4x2x8 in. at $.01 to 18x15x32 at $.17. Wrap foods such as onions in aluminum foil first.

Polyethylene Tubes. Can be washed and re-used. Special clamp that securely closes the filling end. Hold about 6 fluid oz. Weigh 1 oz. For jelly, jam, mustard, ketchup, etc. Squeeze to spread. (13). $.25, postpaid.

Polyethylene Squeeze Bottles. Many are available at local stores, especially drugstores. Unbreakable, flexible at —60°F. Will carry all fluids except gasoline. (13) has the following: flat, holds 2 oz., weighs ½ oz., $.25; flat, holds 4 oz., weighs ¾ oz., $.30; oval, holds 8 oz., weighs 1½ oz., $.35. All postpaid.

Nylon Parachute Cord (550-lb. test). Comes in olive drab or white, 3/16-in. diameter. Be sure you do not get smaller cord with much lower breaking point. Tops for general rope use. Light, but a real all-purpose line for hanging clothes, tent lines, etc. (4, 6, 17, 20). 100 ft., $1.90-$1.98; 500 ft., $8.50; 2100-ft. spool, $27-$39.

Drawstring Clamp. Solves the problem of holding pack and parka drawstrings tight. Weighs ½ oz. (13). $.50.

Personal Equipment

Plastic Envelope Cup. Convenient. Carried flat, but expands to hold water. Weighs ⅛ oz. (2). $.20.

Plastic Canteen, green. With belt clip. Weighs 5 oz. Made of polyethylene, so is unbreakable and presents no taste problem. Holds 1 pt. (13). $2.20, postpaid.

Pocket Compass. (a) Lensatic. Import from Japan. (18). $1.25 (b) Silva "The Ranger". Has a liquid needle dampener and a sighting mirror. Weighs 5 oz. Excellent for orienteering. (15). $12.50 (c) Recta. A Swedish import. Very effective for night use. Liquid type. Weighs 3½ oz. Closed size, 1¾x2½x½. The best compass I have ever seen. If your life will depend upon your accuracy, this is it. (2). $12.50. (d) German marching compass. Has a locking needle. Sighting lines are luminous for effective night use. This compass will do the job for most people on the usual type of camping trip. (11). $2.95, postpaid.

U.S.A.F. Signal Mirror. Virtually unbreakable. I like them much better than metal mirrors. 4x5 in. (4, 10, 11). About $.35, postpaid.

Pocket Wind-Speed Indicator. Two scales: 0-10 m.p.h. and 4-60 m.p.h. 7 in. long. Weighs 2 oz. Comes in waterproof plastic case. (13). $4.75, postpaid.

Thermometer. Range: —30°F-120°F. Metal case, 3/8-in. diameter. Has pocket clip and carrying ring. Weighs 1½ oz. (1). $1.80.

Folding Skis. I have not tested these but report them since I have basic faith in the source, and also feel that they should be of interest to A.M.C. members and other campers. Laminated hickory with full steel edges. Weigh 10 lb. Available in sizes 6 ft. 3 in. to 7 ft. 3 in. in 3-in. steps. (13). $41.50, express collect.

Compressed Wire Splint. Open, 3¾x18 in. Closed, 4x2⅛x⅝ in. Weighs 3½ oz. Two or three should be with each party when on the trail. (13). $.50, postpaid.

Clothing

Chiefly a matter of individual preference and opinion. The following are my own. Check the list of sources at the end, because most of them handle clothing of various types.

Norwegian Net Underwear. EKT Brande. Can be used summer or winter, since it slows down heat loss by conduction. Canadian Army issues this type officially. (3). T-shirt, all sizes, $3.75. Net pants, short legs, sizes S, M, L, $4.75.

Indian Hand-Knitted Wool Socks. Unwashed virgin wool with the natural lanolin still in them. They dry very quickly since they don't absorb much water. (19). $4.45, all sizes.

Maine Hunting (Guide) Shoe. Rubber bottoms and leather (elk) tops. (12). 6-in. top, $10.85; 12-in. top, $14.85.

Imported Italian Boots. Dolomite-type climbing boots, less expensive and lighter than those found in high-Alpine regions, and Vibram soles somewhat thinner, but rugged and entirely adequate. For my money, one of the best buys for good hiking and climbing boots in this country. Two types: (a) Alps, doesn't seem to require any breaking in, add waterproofing, $21.95; (b) Everest, breaks in slowly, takes heavy scuffing, $15.95. (24).

Mountain Parka. Made of high-count water-and-wind-resistant quanto cloth. Double thickness of fabric over hood center and shoulders. Weighs 12 oz. Good for both summer and winter since this is a windproof outer cover. You adjust for the temperature by adding 2 or 3 loosely woven wool shirts or a down jacket. (13). $23.50, postpaid.

Poncho. Made of double vinylite-coated nylon cloth. Be sure to purchase a size big enough to cover both you and your pack adequately. (It's a cold wind that blows from behind.) Two sets of snaps on each side with a snap-fastened lie-flat collar. (2). 53x80 in., weighs 18 oz., $7.25; 66x90 in., weighs 26 oz., $8.75.

Rain Hood. Closed at neck by web strap and buckle with nylon drawstring. Weighs 2 oz. (2). $1.75.

Featherweight Goggles, U.S.A. Smoked plastic lenses. Weigh ¾ oz. Have side-pieces to control light entering. Adjustable elastic headband. (3). $.35.

Sources

1. Trailwise, 1615 University Ave., Berkeley 3, Calif.
2. Camp and Trail Outfitters, 112 Chambers St., New York 7, N. Y.
3. Holubar, P.O. Box 7, 1215 Grandview Ave., Boulder, Colo.
4. Hudson Surplus, Hudson, N. Y.
5. Morsan Tents, 10-18 50th Ave., Long Island City, N. Y.
6. Goldberg's, 202-204 Market St., Philadelphia 6, Penna.
7. Ell-Don Sales, P.O. Box 9081, Chicago 90, Ill.
8. Walter E. Stern, 254 Nagle Ave., New York 34, N. Y.
9. The Smile Company, 536 Mission St., San Francisco 5, Calif.
10. Recreational Equipment, Inc., 523 Pike St., Seattle 1, Wash. ($1 membership fee.)
11. I. Goldberg and Company, 429 Market St., Philadelphia, Penna.
12. L. L. Bean, Inc., Freeport, Maine.
13. Gerry Mountaineering Equipment Company, Ward, Colo.
14. Charles Bradley Wood, 40 Niles Hill Rd., New London, Conn.
15. David T. Abercrombie, 97 Chambers St., New York 7, N. Y.
16. Gloy Import and Export Co., 11 Addison St., Larchmont, N. Y.
17. Mercantile Sales Company, 301 South Seventh St., St. Louis, Mo.
18. J. J. Enright, 148 Green St., New York 12, N. Y.
19. Eddie Bauer, 160 Jackson St., Seattle 4, Wash.
20. Corcoran, Inc., Stoughton, Mass.
21. Scott-Mitchell House, Inc., 611 Broadway, New York 12, N. Y.
22. Paulson Manufacturing Company, Rte. 2, Box 198, Fallbrook, Calif.
23. R. Laacke Company, 11th and Walnut Sts., Milwaukee 5, Wis.
24. Fabiano Shoes, South Station, Boston 10, Mass.

THE CALCULATION OF TRAIL TIMES

by Robert L. M. Underhill

From his guidebook the climber may properly expect some indication of the time which a projected trip will require, both as a whole and over its intermediate sections. The first is desirable for the making of plans, where the time is important not only for itself but as a rough measure of the difficulty. The second may become of vital concern on the trip itself, in cases of emergency, when the question may arise whether to push on to a point of safety or to turn back. Moreover, it may be pointed out that the only instrument, besides (let us hope) his compass, which the ordinary walker carries for determining his position is his watch.

To its great credit the A.M.C. guidebook has always included such estimates of trail times since its first edition. Guidebooks to walks and climbs in the Alps regularly do the same. (Incidentally, trail signs in the Alps, when they give anything at all besides the name of the objective, give the time—and usually nothing further.) But many American guidebooks of more recent origin omit such statements on the ground that they deal, not with a matter capable of objective determination like distance or altitude, but with something that varies from person to person and even with the same person on different occasions. To this specious objection there are two answers. First, there is never any thought of stating times which shall be universally valid as they stand, but only such as shall be consistent, among themselves, for the different sections of a given trail or for a set of different trails when taken together. With a little experience each individual can then learn what coefficient of correction he should apply to the guidebook times to fit his own particular case. Secondly, even for someone without experience the time-statement will have some value, and may even have a critical one, for it will practically always mention a larger figure than such a tyro supposed the distance would require, and may thereby induce him to halt or turn back in good season. To speak more generally, it is a very naive mistake on the part of a guidebook writer to suppose that unless you can state facts capable of exact measurement you had better avoid the subject entirely. Most of the worthwhile things we have to say, in every department of life, are merely matters of opinion, estimate or even sheer guesswork, and yet they manage to serve us as pretty useful guides for all that. Nor is it sufficient to explain that you will just give the facts, the data (i.e. distances and altitudes), in the guidebook or on its maps, and then let everyone work out the times for himself according to his own formula. For it may well occur that just when he needs the time most urgently conditions will be quite unfavorable for the practice of any such rigmarole.

But, to be of any value, time-estimates must be consistent with one another, and to ensure this there are two relatively distinct methods of obtaining them. The first, or straight empirical method, consists in

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having a large number of people walk each trail, keeping exact records of their actual times, and then averaging these all up. It would be hopeless, however, to try to work this method on a really proper scale, with enough people participating, as mountain climbing is still supposed to be for the most part a pleasure, and not the chore which this business would make it. So the most you can hope for is to use a certain selected group of walkers accustomed to maintain a pretty steady performance (I suspect that on occasion only one such walker has been used!), and take their results as representative. This seems a bit shaky as a method and yet it might deliver something good enough, and certainly better than nothing. When the difficulties of the next method are considered one might well feel inclined to be content with it.

This second, or analytical, method aims to deduce standardized times by means of a formula containing terms for all the chief factors which influence our climbing speed. That is a large order, larger than is ordinarily thought, for although several such formulas have been proposed (including one which is much used in our own guidebook), none with which I am acquainted is adequate, owing to the omission of important factors. Your first job, in working up such a formula, is to obtain a mass of data for it by taking detailed distance, altitude and time measurements at many points along each trail of a representative set of trails. Then you have to devise a formula, containing variables for all the factors which prove to be important, and get this formula checked in actual practice by some other persons besides the one who devised it. Finally, in order to apply the formula to new trails, you have to take the same detailed measurements of distance and altitude (though not of time) upon them that you took upon the original trails. The only thing I can say, in order to soften the effect of all this, is that taking such measurements in connection with the working out and application of a formula is a lot more fun than merely taking measurements for their own sake under the first method discussed.

I understand that the times at present given in the A.M.C. guidebook have been obtained largely by a combination of the two methods described, with basic reliance upon the second. Twenty years ago Mr. Louis F. Cutter, who was at that time in charge of the Northern Peaks section of the guidebook, wrote me as follows in reply to an inquiry:

> Few, if any, of the estimates of walking times in the Northern Peaks section of the A.M.C. *Guide* are from direct observation of actual walking time. All, or nearly all, of my estimates that are printed in recent editions . . . are computed by a modification of Dr. Larrabee's formula. For each mile on carriage roads was allowed 20 min., on ordinary trails 30 min. For each 100 feet of ascent 3 min. were added, and there was an allowance for very steep descents or very rough trails. Nothing was added or subtracted for gentle descents, but in some cases, where the trail followed smooth logging roads, something between the 20 and 30 minutes to the mile was taken. In a few cases, where experience led me to believe that the result of the computation was too great or too little, modifications were made by judgment.

It seemed to me that it would be an interesting problem to revise and elaborate the basic formula here referred to in such fashion that some of the corrections which Mr. Cutter speaks of as having been

made "by judgment" could be taken care of more reliably within the formula itself. With this in view I have, off and on during these twenty years, taken detailed distance, altitude and time measurements along a great many different trails in the mountains of New Hampshire and Maine—in fact, on a total of some 450 miles. Distance measurements were made with a bicycle wheel, kindly loaned to me by Mr. Cutter, carrying a cyclometer reading to hundredths of a mile; this was checked against a measured mile on the highway. (Some steep and rough trails, such as those up the headwall of King Ravine, were measured with a 100-foot rope.) Altitude measurements were made with an aneroid barometer, corrected wherever possible by reference to the U.S.G.S. quadrangles. Time measurements were made to minutes, with allowance not only for rests but for the time necessary to take the measurements themselves. On the basis of the mass of data thus accumulated I have been able to devise a formula which works in a very satisfactory way for my own walking—or rather, for that of Miriam Underhill, upon whom I relied to set an even pace even when I was having trouble with the wheel. (On a number of trails, but not on as many as I could wish, I have also taken times again, on another occasion, without the wheel.) But I have not as yet been able to induce anyone else to go over the same trails, taking exact times at all the points which I considered important, so that at present I claim no very solid standing for my formula. What I do claim, however, is to have discovered the chief factors which should enter into any such formula and the complicated character it must consequently assume. For the rest, the specific results here presented are merely tentative, and are offered in the hope that others may continue with this fascinating line of investigation.

In what follows the formula used in the A.M.C. guidebook is first presented, as a basis, and then the various additional factors which may or should be considered are successively discussed.

The Basic Formula. "The times . . . are based on a speed of two miles per hour, plus a half-hour for every thousand feet ascended." (*White Mountain Guide,* 1955 Edition, Introduction, x.) This formula was brought to the guidebook by the late Dr. Ralph C. Larrabee, to whom so many of its improvements were due. It embodies a pattern which has appealed to many writers, in different countries.[1] Dr. Larrabee's version involves the neat result that to walk a mile and at the same time climb a thousand feet takes one hour, a simple and tidy equation between unit quantities which has an immediate appeal from the formal standpoint. Actually, there is good substance to it as well. I have found that to rise at the rate of about a thousand feet in a mile is a very common gradient indeed for our trails; either it is the natural one for most of the slopes encountered, or it has been instinctively

[1] In the *Scottish Mountaineering Club Journal* (Vol. II, p. 136) W. W. Naismith advocated a similar formula, with the same allowance for altitude gained but a speed of 3 m.p.h. on the level, and a Swiss version will be considered presently. Both the Scotch and Swiss versions, however, commit the fundamental error of taking the distance *from the map,* instead of along the ground; the map distance, of course, is merely the horizontal projection of the actual distance and varies in relation to the latter according to the angle of the slope.

selected by the trailmakers as the optimum—which it may well be. So far as I can judge, without measurements, it is also about the gradient of most Swiss paths, and upon these it is quite usual for English and American climbers to reckon time simply by altitude gained, at one hour per thousand feet, though this is admittedly a liberal allowance.

But the neatness of this formula depends entirely on the units of our system of measurement and vanishes as soon as we translate the whole thing into the metric system. Quite naturally, therefore, the Swiss and Germans have no predilection in favor of this formula and in their discussions of the subject the corresponding equation is more likely to take the form that to walk 2 km. (1¼ m.) and climb 400 meters (1320 ft.) takes one hour, which is based upon a rate of 4 km. (2½ m.) per hour on the level.[2] And this does in fact seem to me a more reasonable set of figures. It is generally admitted that a rate of 2 m.p.h. on the level, even upon a trail of ordinary roughness, is very slow indeed. I find that my own rate, not by any means an unusually fast one, on such trails is around 3 m.p.h., and in the records of other persons which have been supplied to me I have found consistent rates of 3½ m.p.h. Granted that a guidebook ought to err on the side of slowness, I feel that a base rate of 2½ m.p.h. is liberal enough if the times are to be taken seriously by the people who need them most, namely, inexperienced young men and women.

But the formula in its guidebook form is rather inflexible and does not lend itself readily to this modification. Mr. Cutter, in the letter quoted, attempted to modify it by allowing 2 m.p.h. on trails and 3 m.p.h. on roads, but for both cases he retained the allowance of 30 minutes for each 1000 feet of ascent. This last is not correct by my experience or, I think, theoretically. For on a smooth road it is not only the level walking but also the ascent which is easier, since the foot can be swung upward with less actual lift. (Within limits, a ramp is easier to climb than stairs.) And certainly a man who naturally walks 2½-3 m.p.h. on a rough trail on the level will require less than 30 minutes additional for an ascent of 1000 feet in a mile. There is, however, an easy way of restating the formula so as to take care of any such variations. The fundamental idea behind the whole thing is that an ascent of 1000 feet is equivalent to an advance on the level of one mile; each requires half an hour. Let us therefore first combine the distance, in actual miles, with the altitude gained, in "equivalent miles" of one thousand vertical feet each, and then apply a common base rate (the assumed rate on the level), whatever it is, to this total in order to get the time. More precisely, the rule is as follows: (1) Take the distance along the ground (not the projective distance on the map), measured to hundredths of a mile. (2) Take the altitude gained, expressed in *units* of 1000 feet. For example, if this altitude is exactly 1000 feet, call it 1.00; if it is, say, 2230 feet, call it 2.23; if 860 feet, call it 0.86; if 40 feet, call it 0.04. In other words, move the decimal point three places to the left in the figure for the altitude gained as it is first given in feet. (3) Add (1) and (2). (4) Multiply this sum by the rate expressed as minutes per mile. We ordinarily think of the rate in terms of miles per

[2] See e.g. an article, "Marschzeitberechnung", by Albert Gemperle in *Die Alpen* for July, 1939, 262-6; also Otto Eidenschink, *Richtiges Bergsteigen* (Munich, 1951), 155.

hour, but the arithmetic is simpler if we use minutes per mile. These two forms of stating the rate correspond as follows:

Miles per hour	4	3½	3	2½	2	1½	1
Minutes per mile	15	17	20	24	30	40	60

The result of this multiplication will be, (5), the time in minutes. Using d for the distance in miles, h for the altitude gained in thousands of feet, r for the rate in minutes per mile, and t for the time in minutes, we can express the whole thing by the formula:

$$(d + h)r = t.$$

For instance, suppose the distance is 1.23 m., the altitude gained 1410 ft., and the assumed base rate 2½ m.p.h. Adding 1.23 and 1.41 we get 2.64, and multiplying by 24 we have 63 minutes as the time. If r has the value 30 (for 2 m.p.h.) we have the special case of the formula that is used in the A.M.C. guidebook. As given above, however, the formula is more general and allows us to vary the rate, r, in easy fashion.

The Effect of Gradient. Dr. Larrabee's formula itself, and the above generalization of this formula, take no account of variation in the steepness of trails. However, the note in the A.M.C. guidebook on the application of the formula cautions that "the results will be reliable only on standard trails and may be too fast on excessively steep grades",[3] and Mr. Cutter in the letter quoted says that in the making of his estimates "there was an allowance for very steep descents [and ascents?]". On the other hand, it has been maintained that no such allowances are necessary. In a valuable article, entitled "Hiking Time", published in the *Bulletin* of the Potomac Appalachian Trail Club some years ago, Dr. H. C. Dickinson advocated the following formula:[4]

> Measure the distance in miles and allow 17 minutes for each mile. Measure all the upgrades . . . and add 1 minute for every 20 feet of climbing. Pay no attention to the downgrades. They take about the same time as the level trail, even more if rough and steep. Pay no attention to how steep the grades may be. The formula takes care of that.

That gradient does make an important difference I can fairly claim to have established by a multitude of observations. For I have regularly taken distance, altitude and time measurements at practically every point where the trail being followed made a marked change to a new

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[3] Edition of 1955, p. x.

[4] Date not at hand. A copy of the article was kindly sent to me by Ridsdale Ellis, editor of the *New York Walk Book*, who says that it formed the basis of the remarks on walking times contained in the Introduction, p. xix, to the third edition of that book (New York, American Geographical Society, 1951). Dr. Dickinson's formula, of the same general type as those already mentioned, allows less time for the distance and much more for the altitude than they do. His second figure concerns a vertical rise as such and is deduced from mechanical considerations (see below); in this interpretation it seems to me substantially valid, but the combination of a figure so derived with the distance in this type of formula does not seem to me to be so. Dr. Dickinson's times turn out to be inordinately slow, in spite of his high rate on the level.

gradient which it then maintained for an appreciable distance. If we take a trail which climbs at the rate of about one thousand feet in a mile as the norm (which I think it is), then for steeper gradients the formula must be modified so as to yield longer times, and for less steep gradients so as to yield shorter ones. The only question is, just how great this modification should be, and here we tackle a problem for the solution of which I consider my own observations as yet inadequate. That is, while I have discovered what modification, or rather elaboration, of the formula will make it valid for the calculation of my own times, I am not sure that in this form it is sufficiently representative. One thing is certain, namely, that younger persons tend to be slowed up by steep gradients much less than older ones, and my own formula may in consequence make an excessive allowance. The whole problem here is an enthralling one which may well attract the attention of various kinds of experts, notably engineers and physiologists.

It is interesting to begin with a consideration of the two limiting cases, very gentle and very steep grades. To obtain data on the first I walked the railway in both directions between Randolph station and Coldbrook bridge, 0.4 m. west of the site of Appalachia station. The distance is 1.60 m. and the gain in elevation, going westward, 100 ft., or the value of *h* is equal to 0.10. That is, the ratio *h*:*d*, which for the "normal" trail is 1:1 (one thousand feet to one mile), was here 1:16. The times required for the traverses in the two directions were the same; in fact, I did the upgrade in two minutes less time than the downgrade (27 and 29 min. respectively, at 3½ m.p.h.), but this difference is within a margin explainable by accidents. It seems clear, at any rate, that for such gentle gradients as this (here 1.2%) the altitude gained can be left out of consideration entirely, at least on such short stretches as occur on our trails.

At the other extreme we have the case of a precisely vertical climb, with the distance equal to the altitude gained. For convenience in comparing this with other gradients let us say that the ratio *h*:*d* here equals 5:1, although that is of course not quite correct, since it reckons only 5000 feet to the mile. Now, if a man walks, say, 3 m.p.h. on the level, how long would it take him to climb one thousand feet—or, as a better test, half a mile or a mile—directly upward? I don't see how we can answer this otherwise than as a mere speculation, and everyone's opinion is invited. Our man must of course climb a ladder, and we must specify that he do so merely by the lifting power of his legs, without using his arms in any way. (The ladder may be provided with a backrest, like those on the Forest Service firetowers, so that the hands will not be needed even for balance.) Also, he must not race up the ladder, as he might up a short one, but must expend only that amount of energy which one does in ordinary uphill walking; for instance, let him whistle, talk or smoke as he goes! (For this reason a longer climb would be a better test than a shorter one.) According to our basic formula, unmodified, the time for such an ascent of one thousand feet would be 24 minutes, and for one of a mile, 2 hours, and I think everyone will agree that these estimates would be very much too low.

From considerations of pure mechanics we can get a preliminary answer of a more realistic nature. In the article already referred to, Dr. H. C. Dickinson says:

> Long experience on the trail with all sorts of out-of-doors people shows that the average user of the trail, who weighs about 150 pounds with what he carries, enjoys himself most when he is doing about one-tenth horsepower, so that we may assume this expenditure as normal. . . . If the 150-pound hiker climbs 20 feet per minute he uses one-tenth horsepower in doing so.

This figure of 20 feet per minute refers to the rate of vertical rise alone, and that is precisely what we want here. Using it, we find that the direct upward climb of one thousand feet would require 50 minutes, and that of one mile 4 hours and 24 minutes, or more than twice the amount obtainable from the basic formula.[5]

But here I think that physiology must put in a word. The figure given is derived from the abstract laws of mechanics; it represents simply the rate at which an application of one-tenth horsepower will lift a weight of 150 pounds, without regard to the specific mechanism by which this is done. However, this mechanism, that of human locomotion, is here all-important. Now, the human leg operates at a greater mechanical disadvantage the higher it must be lifted, as anyone who has tried riding a bicycle first with a high and then with a low seat will have found out for himself. If therefore we take high steps vertically upward we shall have to use proportionately more power, or go more slowly. Furthermore, walking on the level is largely a matter of falling forward off balance and then catching ourselves on the other leg; and while this easy mode of progress still holds in some degree for ascents of moderate gradient, it gradually undergoes modification for steep ones, and ceases to apply at all in the case of a vertical climb.[6] Hence I believe that the result derived from considerations of pure mechanics should be considerably increased.

With regard to any proposed development of the basic formula, intended to include the effect of gradient, the following remark seems of importance. We want something fairly simple from the mathematical point of view, for otherwise calculation by means of it may be so difficult as not to be worthwhile. But such simplicity in form—in an empirical formula like this—may well have the consequence that the formula does not correspond as closely to the facts as it otherwise might. We have to make a compromise between a workable formula and a severely accurate one. From the point of view of mathematical simplicity there are not too many choices possible; however, there are certainly others than the one I have made.

My own formula, which may at first seem a bit complicated but which, with a little practice, is really very easy to apply, is as follows. We operate with the ratio $h:d$, that of the altitude gained, in thousands of feet, to the distance in miles. For a trail of "normal" gradient, rising about one thousand feet in one mile, this ratio has the value 1:1.[7] We figure the corresponding ratio for the trail, or segment of trail, in

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[5] Curiously enough, this is confirmed by a telephone advertisement (not much of an authority, to be sure) which I happen to have before me. "Science says that it takes as much energy to step up one foot as to walk thirteen feet on the level." If we take time as corresponding roughly to amount of energy expended, and again assume a rate of 3 m.p.h. on the level, then to step upward for one mile would likewise require 4 hours and 24 minutes.

[6] I owe this acute observation to Ronald L. Gower.

[7] The ratio $h:d$ is closely related to the sine of the angle of elevation, but it is not the same as this sine owing to the units in which h is expressed. For the ratio 1:1 of the normal gradient the angle of elevation is 11 degrees.

question. This needs to be done in only a very rough way. For instance, if the distance is 1.23 m. and the altitude gained 1410 ft., this latter to be expressed as 1.41, we still take the ratio as 1:1. If the distance is 1.23 m. and the altitude gained 540 ft., we take the ratio as 1:2. Between the ratios 1:1 and 1:2 we need only two others, 2:3 and 3:4, and between 1:2 and 1:3 we need no others at all. (Similarly in the case of the reciprocals of all these.) Now, when the gradient varies below or above the normal, instead of taking the full quantity h in forming the sum of d and h, we take a certain fraction or multiple of this quantity, and that according to the following table:

If $h:d =$	1:5	1:4	1:3	1:2	2:3	3:4	1:1	4:3	3:2	2:1	3:1	4:1	5:1
multiply h by	1/3	2/5	1/2	2/3	3/4	4/5	1	5/4	4/3	3/2	2	5/2	3

It will be observed that the fractions in the lower line are derived from the ratios in the upper one by the simple procedure of adding 1 to each term of the corresponding ratio.[8] Any desired number of further intermediate fractions can be worked out by this method, but I have found that in practice those given are quite adequate; in fact, the two last terms on the right are never used in connection with our trails, and the third from the right only very seldom.

For example, if a trail ascends 240 ft. in .53 m., making the ratio $h:d$ roughly equal to 1:2, then instead of taking the full value of h, or 0.24, in forming the sum of d and h for purposes of the formula, we take only 2/3 of that value, or 0.16, and to this modified sum we then apply our rate, r, whatever it may be. If the situation were reversed, and the trail rose 530 ft. in 0.24 m., we should take 3/2 of h, or 0.79, instead of h itself. (In each case the distance, d, remains unaltered.) As $h:d$ decreases toward zero, h will thus tend to drop out of the formula entirely, leaving the time as dependent upon d alone; and when $h:d$ increases to 5:1, representing a vertical climb, the time required will be 2 2/3 that obtainable from the basic formula.

A curious result of this revised formula is that the time required to climb a given height remains constant for all ratios of $h:d$ from 1:1 to 2:1, inclusive. For example, at a base rate of 3 m.p.h. it will take 40 minutes to climb 1000 ft. in either 1 mile or ½ mile or any distance between. But I find, from experience, that this seems to be about right. However, I still believe that the first gradient is the optimum, and that for a long-continued ascent it would probably require somewhat less time than the second.

The Effect of Elevation. By this is meant, not the effect of elevation *gained* (which we have already considered), but that of the elevation, i.e. the state of the atmosphere, at the level where a given section of the climb lies.

In APPALACHIA for December, 1936 (Vol. XXI, pp. 274-7), Mr. A. L. Davis published an interesting article on "the time required for

[8] A simpler formula would of course result if we just took the ratio in the upper line as itself providing the fraction of h which is to be used, but experience shows definitely that this would result in weighting the altitude factor too greatly. On the other hand, if we were to add 2 instead of 1 to each term of the ratio, in order to obtain the correct fraction of h, we should be giving less weight to the altitude factor, and although this provides a less simple formula it may be closer to fact in the case of the majority of climbers.

mountain climbing" in which he claimed that the time-allowance for gain in altitude varies according to the elevation at which it is made. "For the first 500 feet up from sea-level [it] equals 1.30 minutes per 100 feet gain in altitude. For the next 500 feet (from 500 to 1000 feet elevation) [it] equals 1.33", and it continues to increase with the height above sea-level, "rather slowly at first, then more and more rapidly. At 6000 to 6500 feet [its] value equals 2.69." Mr. Davis appends a table giving the values, at intervals of 500 feet, up to an elevation of 7500 feet, which he believes he has been able to prove by observation; then, upon the basis of an empirical formula derived from these data, he obtains by extrapolation suggested values for elevations up to 26,500 feet. (At this last elevation the climb of 100 feet would supposedly require 82.30 minutes.) In a revision of this article with which Mr. Davis provided me his figures are considerably changed, the allowance for a lift of 100 feet being 1.60 minutes at elevations between 0 and 1000 feet, and 1.88 minutes at those between 6000 and 7000 feet, with corresponding alterations for the intermediate values. This reduces greatly the differences between the allowances at various elevations.

Everyone knows, of course, that at really high elevations—say at 15,000 feet and up—travel becomes progressively slower with the altitude, not only in the vertical but also in the horizontal dimension, because of the scarcity of oxygen. The question is whether this factor is an appreciable one at the elevations below 6000 feet with which we are almost exclusively concerned in the White Mountains. In order to test this matter for myself I made a trip up the Mt. Washington Carriage Road, taking distance, altitude and time measurements at each of the so-called mile-posts. This road was selected for the experiment, not only because of the high elevation reached, but because its almost constant gradient and uniformly smooth surface seemed to promise the exclusion of other disturbing factors. Using the formula as thus far developed, with the allowance for gradient (which remained nearly constant except at the end), I then deduced my base rates for the eight "miles" as shown in the following table:

Landmark	*Distance*	*Altitude*	*Time*	*Base Rate*
Beginning of grade		1600		
	0.71		0:16	4 m.p.h.
1-mile mark		2040		
	1.00		0:24	3¾
2-mile mark		2660		
	1.00		0:23	3¾
3-mile mark		3270		
	0.84		0:21	3½
4-mile mark		3830		
	0.87		0:23	3½
5-mile mark		4440		
	1.00		0:25	3¾
6-mile mark		5150		
	0.99		0:25	3½
7-mile mark		5730		
	0.97		0:22	3½
End of road		6200		

It will be remarked that there is a certain falling off in speed during the first four miles, but that after that the rate remains fairly constant. It seems to me that this initial falling off is to be explained by the supposition that I started out rather too fast, at something beyond my usual gait, into which I then gradually settled, rather than by an assumption that I was slowed down by the increasing elevation, since no such effect is observable higher up.

At my request Mr. Davis was kind enough to send me his detailed records for several of his climbs. Upon analyzing them I found that I could deduce his times, with a few discrepancies, by means of my own formula, without the need of introducing any such allowances for elevation as he supposes. But in our correspondence Mr. Davis made a significant point. He explained that in his climbing he had found it necessary, owing to a combination of circumstances, to push himself to about maximum capacity.[9] Now, for a maximal performance—as an extreme case, let us say for a race up a trail—I think it obvious that speed will certainly fall off with elevation, even at White Mountain levels. And so Mr. Davis may well be right that in his own and similar cases an additional time-allowance of this nature should be made, and that the discrepancies between his times and those deducible from my formula are thus to be explained. But the average White Mountain climber is not working at anything like maximum capacity; and although, even when acclimated, he no doubt comes nearer his limit when walking at higher than at lower levels, yet on the whole I think he finds it easier to maintain his customary gait, with somewhat greater expenditure of energy, than to slow down into an unfamiliar rhythm. So his times would still remain constant, time and energy no longer quite corresponding to each other. It is my belief that up to about 10,000 feet the average person, reasonably acclimated, can climb as speedily as at sea-level, and therefore that no allowance for elevation need be included in a formula for calculating trail times in the White Mountains.

The Effect of Trail Surface. Roughness underfoot certainly makes a difference. At the least, it means that the walker has to lift his foot higher in its forward swing in order to clear obstructions, and this shortens or slows the stride. When more pronounced, it means that possible stepping-places become irregularly spaced and have to be chosen with care, thus causing hesitations and breaking the rhythm. This goes over into the extreme cases where we have to come to a halt and then tackle an obstacle or difficulty. The possibilities of variation from the one extreme of artificial smoothness, such as that of an auto road, to the other of natural roughness as found in high-level terrain, are so continuous that it might seem hopeless to attempt to provide for them in a workable formula.

The A.M.C. guidebook formula makes no such attempt, merely advising that "the results will be reliable only on standard trails", which I take to mean, on those of standard surface as well as standard gradient. Mr. Cutter, in the letter quoted, says that "for each mile on

[9] His base rate, even on ordinary trails, is consistently the relatively high one of 3½ m.p.h.

carriage roads was allowed 20 min., on ordinary trails 30 min."; i.e., he altered his assumed base rate from 3 m.p.h. to 2 m.p.h. to fit these two cases. Alteration of the base rate, r, is obviously the proper way in which to take care of variations of surface under the formula, but to use in general only these two values for r, and those two so far apart, seems a rather heroic way of mastering the difficulty. My own feeling is that we need an intermediate value here (i.e., one corresponding to 2½ m.p.h.), and that it is in fact the most important of all.

Given these three values, however, I believe that we can come off well enough in practice, in spite of the infinite variations in roughness of which trails are capable in theory. My observations suggest the division of trails, or sections of trails, into three classes, to be defined roughly as follows:

(1) Trails of Grade A. Those upon which one can walk, as one does upon a city street or sidewalk, without watching one's feet at every step; i.e., those which, so far as their surface alone is concerned, could be followed comfortably in the dark. They will be all auto roads and some lumber roads in very good condition. For them, take r equal to 20 (3 m.p.h.).

(2) Grade B. Trails where it is necessary to watch one's feet constantly but where, this being done, a uniform stride can be maintained. These will be the ordinary trails, including also old lumber roads and even most of the paths above timberline. Take r equal to 24 (2½ m.p.h.).

(3) Grade C. Trails where the irregularities are so great that it is necessary to break the rhythm and proceed more or less jerkily. These are characteristically trails up the great headwalls and those slabbing steep slopes above or close to timberline; but there are others as well. Take r equal to 30 (2 m.p.h.).

(These rates are an adaptation of Mr. Cutter's, using his two extremes. My own suggestion would be that each of the three should be raised by ½ m.p.h., making them respectively 3½, 3, and 2½ m.p.h., with 2 m.p.h. reserved for a very few unusually rough trails. This is based upon the fact that most of those who use the White Mountain trails in the summertime are young people of school or college age, usually rapid walkers.)

What makes this classification fairly easy to apply is that the great mass of our trail mileage falls into the second class. My guess would be that more than 80% of it is of Grade B, less than 10% of Grade A, and about 10% of Grade C. When in doubt, therefore, assign a trail to Class 2, or Grade B.[10] The only real difficulty arises in connection with Grade C. It is evident that this class could cover quite a range, ending up with trails which involve rock scrambling or those which are chronically in a poorly cleared condition. But we simply have to exclude both these extreme cases (of which there are very few instances indeed) from treatment under our formula, and give times for them by the purely empirical method described at the outset. (This is the

[10] Of course, one could introduce more intermediate grades, to take care of doubtful cases: a Grade AB, between A and B, with r equal to 22 (2¾ m.p.h.), and a Grade BC, with r equal to 27 (2¼ m.p.h.); but this seems to me a quite unnecessary complication.

method universally used in giving times for out-and-out rock climbs.) Instances would be: the headwall of Huntington Ravine, the Caps section of Caps Ridge, and the steep section of Lion Head.

One important remark should be added. A steep trail ordinarily becomes at the same time a rough one. But, the steeper it becomes, the less the roughness may count as a retarding factor; on the contrary, the broken-up condition may provide a better set of footholds than would otherwise occur, making the steep incline into something like a flight of stairs. The test whether an allowance for roughness should be made in addition to the allowance for steepness lies in whether one has to hesitate and pick his way, selecting his steps with care, or whether there are enough of them, conveniently placed, to permit the rhythm to continue unbroken. To be sure, experience counts for a good deal here, and to be on the safe side one should probably envisage the troubles of the beginner or near-beginner.

On the Descent. This part of the subject has to be considered, because of its importance in the case of ridge trails, with their successions of ups and downs. But it is something upon which I have very few reliable data.[11] Hence the following remarks are for the most part very tentative indeed.

On trails of "normal" gradient (about one thousand feet in one mile) the time for the descent may be reckoned as six-tenths of that for the ascent. This is the one definite figure in which I feel confidence. Two-thirds, I believe, is a fraction much in favor with experienced climbers; one-half has often been advocated.

As the gradient decreases below the normal, the time of descent gradually approaches that of ascent until, at gradient zero, the two come together, both being now the time for walking on the level. As the gradient *increases* above the normal, the time of descent seems gradually to lessen in relation to that of ascent, as one would expect. If we were wheeled vehicles, of course, it would lessen enormously in this respect, but the mechanism of the human walk is against that. We don't roll smoothly down slopes, we fall and catch ourselves at each step, and as the slope steepens this sort of action, with its strain upon the knees, becomes harder and harder—though not proportionately as hard as the effort of raising ourselves at the same angles.[12] I have much reason to believe that at the gradients where the ratio $h:d$ is equal to 1:2 and 2:1, respectively, the times for the descent are approximately

[11] Many trails, to be sure, have been measured on the descent, but the time-readings obtained under such circumstances, unlike those taken on the ascent, are practically useless owing to difficulties with the wheel. On the ascent, when one is going slowly in any case, I have found—by comparing times on the same trail with and without it—that the presence of the wheel seems to make no appreciable difference, save on very steep or rough trails. On the descent, however, from making similar comparisons, I know that its proper management retards the speed very considerably, especially on steep and rough trails. Consequently, the only time-readings which I consider reliable are the few made, without the wheel, on descents of trails already measured for distance.

[12] When young, no doubt, we have all on occasion simply relaxed our knees and run down trails, cutting the time of descent to a very small fraction of that of ascent. But that sort of thing is out of bounds for consideration in a guidebook.

0.7 and 0.5 of those for the ascent. But beyond this I am quite unable to go, so far as specific figures are concerned.

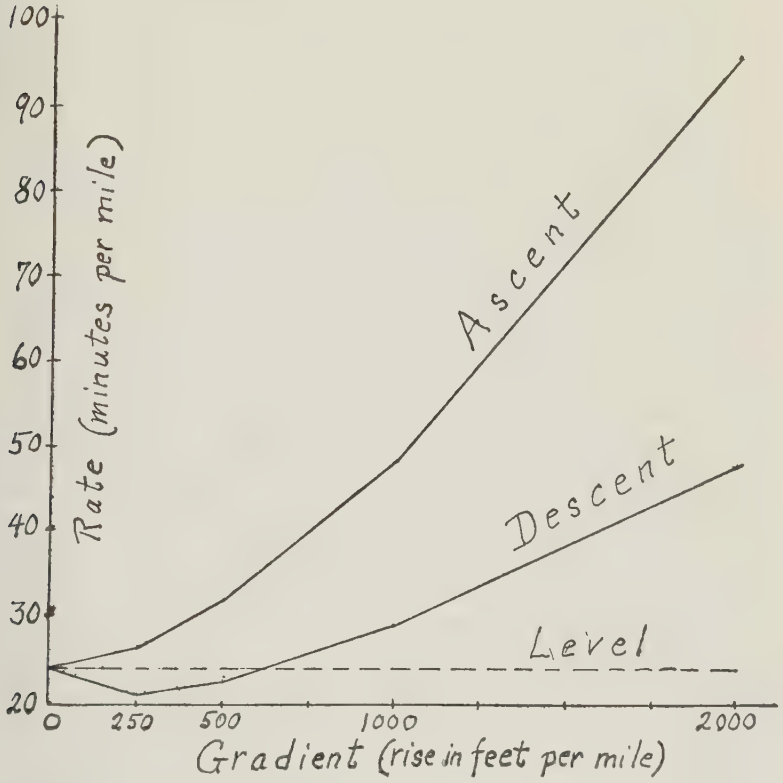
We should also consider the times of descent in relation to those for walking on the level. For the "normal" gradient, the former are slightly longer than the latter. If, for instance, the base rate is 2½ m.p.h., then, whereas it takes 24 minutes to walk a mile on the level, and 48 to ascend for the same distance with a gain of 1000 feet in elevation, it will take 29 minutes to descend this latter mile. This is because of the effort of braking just mentioned. As the gradient increases, so will the time over that required on the level; at 2:1, where the ascent requires 96 minutes, the descent will take 48. But, when and as the gradient *decreases* from the normal, there comes a time when we really do function more or less like wheeled vehicles and take advantage of the incline. Everyone knows that on a gentle downhill grade we can swing along faster than we can on the level; the drop of the ground facilitates the forward fall in which walking largely consists, while the extent of the fall at each step is not sufficient to require any braking effort. If 0.7 of the time for the ascent is about the right figure for that of a descent at the gradient 1:2 (a drop of 500 feet in a mile), then this state of affairs has already been reached in a mild degree, the time for the level (at 2½ m.p.h.) being 24 minutes and that for the descent 22 minutes. There must of course be an optimum for this sort of thing—maybe around the gradient 1:4—where we make our top speed, after which the time for the descent will re-approach that for the level and finally coincide with it.

The accompanying graph is intended to give a general idea of these various interesting relationships. The two heavy lines show the curves for the times of ascent and descent as the gradient increases. (The figure has been laid out on the assumption that the base rate is 2½ m.p.h., but this is immaterial, as similar relations would hold for any base rate.) The curve for the times of descent is merely tentative, on both ends, beyond the values 1:2, 1:1 and 2:1 for the abscissas. The broken horizontal line, representing the time for the level, has been added for purposes of comparison; properly, it does not belong in the figure at all, since difference of gradient does not apply to it.

A formula for calculating trail times is not something to be laid before a walker with the comment that now he can go ahead and figure his times for himself. If it is merely a formula of the simple basic type, without provision for variations of gradient and surface, then it is quite inadequate and may at times be seriously misleading. Nor is there much point in cautioning the user that it will hold only for trails standard in gradient and surface, for he does not know, and is not told, whether the particular trail in which he happens to be interested is standard in these respects or not. If however the formula is a more complete one, with provision for such variations, then its use will require such detailed data and careful calculation that the walker cannot be expected to apply it for himself right then and there; all this work should already have been done for him by the guidebook writer.

Is such a formula, then, worthwhile for the guidebook writer? This question will have to be answered by each group of writers for them-

selves, and they will undoubtedly do so on a basis of taste. For our trail guidebooks are written, properly enough, not for pay but for fun, by persons who like that sort of job, and naturally each group will adopt the methods which they enjoy using. To some the development and use of a somewhat complicated formula will appeal, to others not. I would only remark again that the alternative method, that of obtaining the times by actually walking the trail on repeated occasions, is not an easy or entertaining one—and still harder is the job of inducing other people to share this chore.



SKYLINE SKETCHES

HIGH ADVENTURE IN ARIZONA

by Austin F. Hawes

I SPENT THE SUMMER OF 1901, when I was 22 years old, in Arizona. At that time Arizona was still a territory, with a population of one person per square mile. Although the territorial capital of Prescott was an early pioneer town, the region as a whole had been settled by English-speaking people for only about thirty years. Even those who had seen the tough towns of the Dakotas considered Prescott in 1901 the wildest town in the United States. Gambling dens and saloons prevailed on the main street, while the back alleys were less respectable. I can still hear the chink of silver dollars as those weather-beaten old miners, with their six-shooters in their holsters, played their unsmiling game with Chinamen, Negroes, Mexican greasers and halfbreed Indians—and above it all the raucous singing of the girl pounding the piano.

The Prescott Forest Reserve, where we were to work, was one of many reserves, all in the West, which had been set aside by presidential proclamation by Presidents Cleveland and Harrison. These reserves represented the first idea of conservation in the country. They were under the General Land Office of the Department of the Interior, which employed rangers (at $60 a month) as a protective force. Gifford Pinchot, Chief of the Division of Forestry in the Department of Agriculture, had no forests to administer. At that time he was trying to persuade the Department of the Interior to practice forestry on the reserves, and the purpose of our work was to make studies which would be the basis for such management: to take an inventory of the various kinds of timber on the reserve, study the rate of growth, and report on previous lumbering and the future needs of the region for forest products. It was much the same kind of work that I had been doing the previous summer in the Adirondacks. Anson Cohoon from Carolina was in charge of our party, which assembled at Prescott.

The country was full of copper, gold and silver mines, some being worked, some abandoned, but most of them temporarily closed for lack of capital.

As the boys had come from all parts of the country, they were known by their states. I had a survey crew consisting of Texas and Illinois and a tree-height crew of Kansas and North Carolina. We worked north through twelve long rectangular acres, then east four acres, and back on a parallel course twelve acres, thus measuring the trees on twenty-eight acres. Working in that country was terribly hard, principally because of the heat and dryness, and also because it was so mountainous. As chainman, I pushed my way through the brush, scrub and manzanita, dragging the long chain which was fastened to my belt behind. Once I suddenly noticed a rattlesnake coiled on a rock about three feet from me and breast high. I jumped about thirty feet down the mountain, dragging the chain. Illinois shot him—four rattles.

It is unnecessary to repeat the doings of each day. Long hard hikes, suffering from thirst, and encounters with snakes, were the chief items

of interest, with an occasional horseback ride. On July 15 Murdock skinned a rattler killed by the lion hunter, a man who made his living from the rewards he got—$25 for each lion. On the 18th, while hunting for water in a little gorge, Sparks came upon a great rattler and killed it with a rock, getting fourteen rattles. I saw my second rattler coiled under a rock. I was for shooting it but Ferry, our new man from Yale, thought best to kill it with a stick. Snake got away. On August 5, Carter and his crew had a narrow escape from rattlesnakes as they came upon a den of them. Frank struck at one with a stick and missed, falling over to within a foot of the snake. Fortunately it had struck and was uncoiled, so could not hit Frank. They killed three. On August 28 Whiting discovered a large rattlesnake which Ferry killed. We cut off his head and turned the skin inside-out. He had twelve rattles. Inside his stomach we found a half-digested rat. Fortunately, no one was bitten in any of these encounters.

When we completed our work around Horse Thief Canyon, we moved camp back to Crown King—a mine, store, postoffice and two or three houses. Thinking that we could cut across country we set out, with only two biscuits apiece. By 2 o'clock our water was gone. Later I got one or two sips of stagnant water from a pool, strong with bird manure and swarming with small snakes. It was after 6 when I began climbing a mountain. I was alone until nearly dark, when I came upon Cohoon. We could hardly take a step, from fatigue and thirst, and at last lay down and tried to sleep. With the first glimmer of dawn we started on, somewhat refreshed by the coolness, and finally reached the top of the ridge from where we could see Crown King. We soon struck a trail and finally came to a spring, the most welcome sight I ever saw.

We finished the work the last of August. John Ferry and I decided, before going home, to see more of Arizona, and in particular the Grand Canyon. At this time the railroad from Williams to the Grand Canyon was under construction. We had to complete the trip first by stage and then a walk to Row's Well, where we had been advised to camp. The forest ranger, who lived in a log house near the well, returned late that evening with a companion, both gloriously drunk. The Department of the Interior at this time required rangers to take long rides each day to various parts of their forest, and at the end of the week to send a written report to Washington. As there was no inspection, they often omitted the rides and simply made imaginary reports. Therefore, when this ranger sobered up the next morning, he was much embarrassed to learn that we were from the Department of Agriculture, imagining that we were spies on his work. He knew that Pinchot was trying to get control of the forest reserves.

The ranger's friend took us in his buckboard to the Bright Angel Hotel, where we had our first inspiring view of the Canyon. Then he drove us to the Grand View Hotel, where we met the famous Munchausen of the Grand Canyon, John Hance. He had lived around these parts for many years and in his more active years had made a trail down to the river. His chief function at the hotel seemed to be to entertain guests with tall stories.

On September 4 we descended the Hance Trail, which was 8 miles long and in poor condition, and finally reached the Colorado River, at this point wide and comparatively quiet. Although the water was very

muddy, we went in for a swim to get cooled off. Hance had a tent with a few provisions there and we took a can of beans, as was the free and easy custom of hospitality in the West. The Canyon was terribly hot and we suffered a good deal from heat and thirst. There was no place to walk near the river, as the sides are very steep, so we had to climb back about a thousand feet to the first bench, where there was a trail paralleling the river. When we found a very welcome little brook crossing this trail, we camped for the night. Upon awakening the next morning I was startled to see a scorpion only a few feet from me.

Along the sides of the Canyon are many precipitous cliffs, with talus slopes formed by falling rocks. In the past, the Indians had searched out the places where the cliffs could be climbed and made crude trails, which were later improved by white men. It was our plan, after descending the Hance Trail, to walk along the bench at the foot of the cliffs and ascend the next day by the Berry Trail, supposed to be about 20 miles away by the winding terrace trail which had to go around many side-canyons. Foolishly, with little idea of the hazards involved, we had brought enough food for only two days.

About noon we saw a faint trail crossing ours, but it was nearly obliterated by the tracks of wild burros and as we found no human footprints we concluded it was just an animal trail and went on. About 1 p.m. we finished our last food. Later we saw other indistinct signs of a cross-trail in a branch canyon, which had a fine brook where we filled our canteens. We wasted nearly the whole afternoon exploring this canyon until we were convinced that the first one must have been the Berry Trail after all. We then decided it was safer to push on to the Bright Angel Trail, which we thought to be about 35 miles from the Hance Trail and therefore about 15 miles farther. The worst aspect was our uncertainty as to whether we should recognize the Bright Angel Trail any more easily.

As we lay down for the night John asked me, "Austin, are you a Christian?" Looking up at the towering walls which imprisoned us, I was fully aware of the connotation of his question, and I knew that in his orthodox meaning I was not. But since my family had departed from the Calvinism of our Puritan ancestors a century before, I was not much concerned about the future life, but very much so about prolonging the present one.

Without any breakfast we started at 6 a.m. and walked well for the first few hours. My water became warm and gradually gave out, and as it did, I weakened. It became necessary to stop and rest every mile or so. After a tramp over the burning desert where I had to pick my way among cacti, I would drop behind a rock which offered the only shade and sleep would come upon me in no time. Then I would dream of home and things to eat and drink, especially my grandmother's raspberry shrub, nectar for the gods. When the sun moved around the rock I would awake and go staggering on. John had a two-gallon canteen and pushed ahead faster. When I had bought my one-and-a-half-gallon canteen in Boston I had not realized that two quarts might mean the difference between life and death.

John and I became separated. Several times I lost the trail and found myself at the brink of a side-canyon that I must go around. My walks became shorter—only a fraction of a mile—and my rests longer, until I

hardly cared whether I went any farther. Finally, about 5 p.m., after we had been separated for several hours, I was awakened by hearing John calling faintly in the distance. He was coming back with water which he had found in a little spring. I drank over a quart and was greatly relieved. Then we went on to the spring, where he had also found some coffee left by campers the year before. We built a fire, ground the coffee between stones, and made ourselves a strong drink. This was the first nourishment we had taken except water in twenty-eight hours. It gave us strength to go on and at about 7 we came upon the Bright Angel Trail. It grew dark early in the Canyon but the trail was good, so we toiled up with lightened hearts. John got to the hotel first and ordered supper, which was ready when I got there. At 10 p.m. we ate our first solid food in thirty-three hours.

In later years I have asked myself what would have happened if John had not brought me that water. In view of our previous experience in the Prescott Forest I believe that after a night's sleep I should have been sufficiently refreshed to go on in the cool of the early morning and should have found the spring and coffee. Sven Hedin, in exploring the Takla-makan desert of Central Asia, survived four and a half days without a drop of water. He says that after the mouth and throat were thoroughly parched the craving for water lessened, but the body weakened and the desire for sleep became almost irresistible. I was in good physical condition for the ordeal.

Three years later John Ferry wrote me: "Many, many times my thoughts have wandered back to our experience in the Grand Canyon and, whatever betides, one portion of our two lives is closely bound together. I have often felt profoundly thankful for that ordeal we went through, hard as it was, for my character is better for it. We both learned while in the depths of that awful place how much one can do if one tries. Several times I have struggled out of hard places solely through fiber toughened by that experience."

THE RESCUE OF MAX ENGLEHART

by Arthur F. Whitehead

By the 25th of September, 1925, all was quiet around Pinkham Notch. The Range huts had been closed earlier, and now the Summit House and Tip-Top House closed too. Only our own Pinkham Notch Camp, where Joe Dodge and I were the crew, and the Glen House with its Carriage Road were still operating. The Glen House planned to keep the Carriage Road open until Columbus Day, if the weather would permit. For the convenience of the guests who would make the auto trip to the summit, they opened the old Stage Office and sent up Max Englehart who, up to this time, had been cookee at the Glen House to act as caretaker and to serve coffee, sandwiches and similar food. Max, a great woodsman and trapper, had spent the greater part of his life wresting a living from Nature. While mountains were new to him, it was felt that with his experience he could easily adapt himself to life on the summit. Although about 58 years old, he possessed

remarkable vitality. Food, water and firewood were supplied to him from the base; the ruins of the old garage offered plenty more firewood.

As Columbus Day approached, reservations poured into Pinkham. Days before, we had all we could take. The weather was cold and clear; mornings would reveal the summit frost-covered. On October 8 we awoke to find a rather heavy frost and snow-fall, lower than before, on the top and on nearby peaks.

Friday the 9th was our last day of rest, as Saturday morning would see our folks piling in. The afternoon was dull, with the usual winter sky. In the evening the temperature was down to freezing, nothing unusual, and about 9 p.m. it started to snow. When we turned in it was coming down rather heavy.

Saturday the 10th we were up early and what a sight greeted our eyes! There were eight or nine inches of snow on the ground and it was still snowing. The trees and buildings were decorated in winter gala attire. It was about freezing. About 8 a.m. the temperature suddenly dropped and the wind picked up. Our fairyland disappeared into wild disorder; before long the temperature was 17° and the wind terrific. It seemed as though the cabin could not withstand the blasts; the gale almost lifted the roof. Joe drove to Gorham in the truck that morning and was nearly capsized in the open stretches beyond the Glen House. We did not entertain any fears for Englehart on top, however, since he was well supplied with food and firewood, and his building was strong and chained down and had weathered many a winter. And, too, nearby was Camden Cottage, the staunchest and sturdiest building on the summit, which could be kept red-hot in the coldest winter storm.

By Saturday evening there was no let-up in the storm. Few of our guests had arrived. In the afternoon Joe had taken Ringtail (the A.M.C. truck) to Intervale to meet Red Mac, and on their return they hauled out a dozen cars stalled in the snow on Spruce Hill.

Sunday the 11th the storm lessened. We had about a foot and a half around our place, with many deep drifts. The summit and lower peaks were still in the clouds, with the storm raging furiously. We could get some idea of its violence from the occasional glimpses of the lower ridges and the speed of the clouds racing by them. Several hardy climbers tried Tuckerman's, wallowing almost to Hermit Lake Shelter. Above the Cascades the snow was two feet deep, near Hermit Lake it averaged three to four feet.

By Monday the 12th the snow was practically gone from the region around camp, but higher up the storm still continued. Our guests left and we set to work to close up the camp for the winter. In the afternoon Joe went to Gorham in Ringtail. On his return he stopped at the Glen House and learned that Englehart was missing from the top! On the Thursday preceding, Paul Le Clair had gone up to the Stage Office to do some carpentry work to make the building tighter. He left the top early Friday morning, since he and Max had seen the storm approaching. No one went up again until Monday, when two Glen House guests reached the top after a terrific battle with the elements. They were to tell Englehart to close up and come down. But no one greeted them. The building was cold; snow had forced in through the walls. They found a note on the table in Englehart's scrawl: "Laf at 12 for Tocmans

Arein—no wood".[1] When the two climbers reached the Glen House again, badly exhausted, shortly before Joe stopped in there, plans for a search party were organized.

Due to the strength of the northwest wind, the only way Englehart could have come down was on our side. He knew nothing of Tuckerman Ravine or the trail, but had perhaps heard that there was a means of descent in that direction. The search party was to start early the following morning. Joe and I dressed warmly, and carried with us a hatchet, hunting knife, long coil of rope, flashlight, food and hot drinks, and Joe's field-glasses. Even though Libby had informed the newspapers and the news was nationally known, our party was small. No crew came in from Gorham as I had hoped. Besides us two, there were only Glen House men: Elliot Libby, Fred Pike, Dennis Pelquarke (a nephew of Englehart's, I believe), Tripp and a young French fellow. They seemed poorly dressed for the storm, and carried nothing except their own lunches.

By pushing it through the drifts we managed to get the old Pierce Arrow touring car, belonging to the Glen House, a little over two miles up the road. From there to the Halfway House was pretty warm work, even though the storm still continued on the summits. Joe and I expected to get more help for the search crew at the Halfway House, but the workers there were too intent on getting their house closed that day to be interested in searching—a rather callous reception, Joe and I thought.

Above the Horn it was much colder and the wind strong and biting. Shortly above the five-mile mark we got into the storm, where our vision was limited to about thirty feet. Frost formed on our clothes and on the hair on our faces. When we reached the summit we were white. Joe, Pelquarke and I went along ahead of the rest, keeping a sharp eye on all likely spots near the road where Englehart might have sought shelter. We reached the summit at about 11 a.m. In the Stage Office we found on all sides evidences of Englehart's hurried departure—the coffeepot was frozen on the stove, the water in the washboiler was frozen solid. Still, there was plenty of food and many pieces of furniture which could have been broken up into firewood. The terrific force of the wind had blown the snow through the walls and built a drift about six feet high, extending four feet from the west wall, even partially covering the table.

In twenty minutes the others arrived and we searched about the buildings on the summit. Camden had not been used, nor were there any footprints discernible. We assembled again at the Stage Office. Sharp-eyed Joe saw writing on the wall—something in pencil on some new wall boards—mostly covered by the forced-in snow. "Je pars, date Oct 11 1925. Poudre de neige; le vent souffle d'une force de 100 miles a l'heure; maisante, temperature très mugir. Max." The 11th was Sunday; he had now been missing 48 hours!

We now made ready to leave the building. Joe and I assumed our next step would be a further search about the cone, so it came as a surprise to learn that the others were going down again. True, they were not dressed to combat the elements, nor were they as familiar with the lie of the land as we were. Pelquarke showed the stuff he was made of

[1] "Left at 12 for Tuckerman Ravine—no wood."

by saying he would accompany us, and yet he was not dressed or prepared for it, or familiar with the cone. The others tried to dissuade us, saying it was dangerous to venture onto unmarked territory in that wild storm; that Englehart was long since dead and we should wait until the weather was more favorable. We too had come to the conclusion that we were searching for a frozen body, we did not see how anyone could live in that terrific storm. But Joe and I were for searching, we would look about a bit now that we were there, and Pelquarke was of the same spirit.

We started our explorations where the Tuckerman Trail leaves near the garage. We took the course we assumed Englehart took, directly down the cone with the wind at his back. He could have taken no other, since the Carriage Road when he left was swept by the direct force of the wind to such a degree that a human being could not even have crawled down it. Our course was southeast—it was a northwest storm—to the north of where the Tuckerman Trail lay obliterated beneath the snow. We separated, going down about thirty or forty feet apart, the limit of visibility in those dense clouds. In some places the snow was soft, in others packed hard, and they all looked alike. From our knowledge of the terrain we knew that in some places the snow was drifted fifty feet deep. We saw many marks which we thought were footprints, but we decided that they were all the work of the wind. Many outjutting rocks resembled a body. The wind and frost had played queer tricks, rocks took on fantastic shapes, snow was in ripples resembling tracks. We searched many potential shelters behind and under rocks. None of this was without arduous work; we took long, unexpected slides on steep packed snow, we sank to the armpits in many loose crannies, our boots would catch in apertures and our legs be badly wrenched. On loose snow we had to crawl on all fours to avoid going out of sight. It did not take us long to find out that it was best to travel together and help each other out. While it cut down our range, Mother Experience taught us that we must do it.

We finally reached the edge of the low scrub on the Alpine Garden, at cloud level, and here we had occasional glimpses of what lay below us. There was nothing in sight to give us hope. We attempted to reach the rim of Lion Head and Tuckerman's, to peer into the depths, but suddenly to our surprise found the going impossible. We sank practically out of sight in the scrub, the tops of which had caught the snow and given it a deceptive appearance of solidity. We struggled our way out of that as soon as possible.

Here we came to the conclusion that we might have wandered too far to the south and we decided to skirt the Garden, heading north, thus intercepting all downhill tracks. We thought, too, that when Englehart had got below the summit, he might have headed for the road where it circles back near the 6½-mile point. The gale was now making itself felt on our faces; our hands and feet had long since begun to feel numb. We called a halt in the lee of a nearby boulder and imbibed a little of the coffee in our thermos bottles. Although it was only warm now, it sure tasted good and, with a few sandwiches and eggnog, it put new life into us. As we neared Huntington's the clouds again lifted and we had a partial view into the depths. We continued nearly to the road, then headed back for the summit, slabbing the cone. The Stage

Office proved a welcome shelter from the wind while we stamped feet and pounded hands to restore circulation.

When we were again more or less normal we decided to make another sortie, this time farther to the south, following the general direction of the Tuckerman Trail. First we gave the immediate locality a more thorough search for footprints. Sure enough, Pelquarke discovered perhaps a dozen distinct footprints hard and packed on the brittle drifted snow. We attempted to follow the direction from there that Englehart might have taken, but we never found another print. On this search we crossed some of our own footprints, now practically obliterated by the wind-driven snow, which showed us what little chance we had of finding Englehart's tracks.

By this time we had come to the conclusion that, if Englehart was on the cone, he had denned up and the snow had covered all traces of his refuge. Also, the wind was springing up faster, the cold came down with almost a crash. We struck back to the top, but with no more results. Then we decided that we'd better move down before we got into serious difficulties ourselves, since the weather was increasing in violence. We had been on the cone for more than four hours. The first half-mile of the Carriage Road was a terror. All three of us had to hang on to each other to withstand the gale. All three had white spots on our faces, and we hurriedly pulled our silk handkerchiefs about our faces with frozen gloves and numb hands. We had left the top none too soon. As we approached the Halfway House we noticed that the windows were all shuttered, no smoke was issuing from the chimney, the doors were barred. We did a little mental cussing at such a cold-blooded outfit, and pounded down the road again. As we neared the bottom, the road became a mass of mud. It had been a warm day in the valley, which made it impossible for people to believe the conditions on top.

After supper at the Glen House we discussed the probabilities. Joe stated what he thought the next step should be. Searching on the cone was useless until the weather broke, but there was a chance that Englehart might have made the valley. If snowshoes could be got hold of, he and I would go up the next day and search Tuckerman's, Boott Spur, Lion Head, Huntington's. The others tried to dissuade us from further search, saying it was useless, that Englehart was buried somewhere on the cone, but finally Libby agreed to get us some snowshoes by morning. Then we hopped into our truck and went up the hill to our camp. The wet clothes were hung up to dry in the cold kitchen, our feline companions were victualed, and as soon as possible we were between the blankets.

Although we were dog-tired we slept little, our minds were too wide awake. We did not sleep until it was early morning, and then our tired bodies succumbed. The sun was shining bright when we awoke—it was about 10 a.m.! No snowshoes had arrived. It was a wonderful clear day out, warm, the sky a deep blue. At last, about 11.30, a car drove in and Libby stepped out with our snowshoes. He explained his belated arrival by saying he had been doing a lot of long-distance telephoning to Boston newspapers.

Beyond the Cascades we entered the snow, and about a mile from Pinkham we changed to snowshoes. We soon found out what we were in for. The shoes themselves were good, but the bindings were poor;

we had little control over our direction. The shoes flopped loosely, headed this way and that, caught on underbrush and generally slowed us up. My binding soon broke, and time had to be taken out to make an emergency repair from my moccasin lacing. At 1 o'clock, one hour after we had left Pinkham, we arrived at Hermit Lake Shelter A, on a rotten trail with poor snowshoes—good time for even fine hiking conditions!

The snow where we now were averaged four to five feet in depth. It had been a real snowstorm, no doubt about that. Suddenly I heard a noise like a railroad whistle far off—but I said nothing. It was a calm, clear day, sound would travel for miles under such conditions, and I thought it was a Crawford Notch train. Then it came again—more like a wail. I looked at Joe, he looked at me. What were we hearing? I asked Joe if he had heard the previous wail. He had, and he too had thought it a train whistle and so had said nothing about it. Together we let out a warwhoop. Almost on top of the crashing echoes came a yell, strangely near—"Help!"—a long-drawn-out wail. We could not locate its direction, it might have been either on Lion Head or Boott Spur, so we yelled together, "Stay where you are—we're coming—keep calling", and various other messages to keep up his spirit.

We made a line for the bluff above Hermit Lake, calling as we ran. The snowshoes took a beating. The snow on the headwall appeared as deep as in winter. When we called from the bluff, the answers were located as coming from Boott Spur, from somewhere on its walls. We each thought of the almost impossible task of getting someone down from there. We started on a run again, our shoes flying in all directions. The answers were coming from mighty close. We knew now that our man was in the valley and not on those towering cliffs. We broke off the Tuckerman Trail, at a point about one-eighth of a mile above the lake. We had not gone very far from the trail—moving slowly, for the calls were near and we were looking hastily through the low scrub in all directions—when suddenly I stopped. I had seen a head, low down, on the level of the snow!

"Do you see him?" asked Joe. I pointed him out, only about fifty feet away; and we crashed through, jumping over fallen trees and half-buried scrub. There he was, crouched in the lee of a boulder, where a brook kept an open spot in the snow. A face lined, cracked, haggard, unshorn, bloodshot eyes, no hat, clothes apparently soaked, but still full of life and spirit until we reached him. Then he broke down and cried like a baby. His exact words, at greeting, I do not remember, it seems it was a repetition of "Oh, my dears!" and an exhortation for us to put on some clothes before we froze. We were still in our steaming undershirts and it must have seemed queer to Max, shivering from cold, with his face and hands swollen from freezing, to see us so clad. In a jiffy our snowshoes were off, we laid Max out on them in the sun, took off his wet leather jacket, shirt and gloves, and gave him my green mackinaw shirt, Joe's gloves and toboggan hat. He kept telling us to be careful of the jacket; he had brought the receipts of the Stage Office in the jacket pocket, and guarded it carefully. It was about $18 or $19, I think, but to Max it was other people's money which he was responsible for. Faithful cuss! He worried more about that money than about himself. We gave him some of the coffee with a shot of the alcohol in

it, and then pressed our bodies to him to give him warmth. Then, when he felt better, we fed him some eggnog—one of the best of tramping foods—and some sandwiches. But his weakened stomach could not hold food. We wanted to get his wet pants off; he had on two pairs of pants and the outside ones were soaked. But they were laced into his high boots. He insisted that the inner pair were dry, and furthermore told us that if we did get his boots off, we could not get them on again, his feet had swollen so. So we decided to leave that part alone. We asked him about injuries. He said he was badly bruised and his shoulder hurt, but he did not think any bones were broken.

Suddenly we were in shadow and it became chilly; the sun had already set here. That galvanized us into action. Ways and means of getting Max down were the main question. We decided to try packing him at first. We slipped one of Joe's mackinaw coats on Max; then we put on the snowshoes again. Joe took him on his back for the first carry, while I put the two packs together. But that soon proved disastrous. The shoes would not carry the double weight, and Max and Joe went down in a heap. It was tried again, but no headway could be made. So Max was set down and our next thought was a litter.

We skirmished around and cut some poles, and slung our spare coats and Max's wet shirt and jacket on them; we each had a mackinaw shirt on now. Then we lifted him on our improvised stretcher and tried that. But about fifty feet proved that this, too, would be impossible. The shoes could not bear the added weight, they were so cumbersome we could not maintain a uniform pace together and falls were frequent, subjecting Max to some terrific jolts. So another stop for a consultation.

The next thought was a drag, a travois. As the trees about us were rather small, it was necessary to go a considerable distance down to locate the right type. Max was certain we were leaving him to die; we had to convince him otherwise. To cheer him up we talked loudly and made a lot of noise. When we brought the poles back, Max showed the stuff he was made of by telling us how to rig it up. The old fellow had sunk only once, when we found him, and then he was himself again, a woodsman who did not know the meaning of the word "die". We slung the coats on over the brush ends, lifted Max on, and with one fellow between the poles to drag, attempted to start it. It was an unwieldy affair; one fellow had to get behind on his knees, pushing and lifting on that end to overcome its inertia, while the other dragged. And then it was all the other could do to move the drag. We discovered that we had the weight in the wrong place and so stopped, lifted Max off, shifted the position of the coats, lifted him back on, and started over again. The change was an improvement, but still it took both to start it, and a hundred-foot tow was about the limit for one fellow. And that was always broken up by several falls caused by the poor snowshoes. Yet it was the only possible means of transportation. It certainly was back-breaking labor, both for us and for poor Max, subject as he was to jolts when the fellow doing the dragging fell.

After awhile the rise at Hermit Lake was reached. Try as we could, we could get no footing in the steep, deep, wet bank of snow to get us over. Finally, after a half-hour of unsuccessful labor, Max insisted on trying to climb it himself; and with what assistance we could give him,

the gritty old woodsman crawled up the pitch. What we would have done otherwise is a conjecture.

Once on the bluff above, we decided to rig a tump line ahead so the two of us could drag together; it was more than one could do. Here again Max came to our aid with advice on rigging it up, from his fund of woodlore. That done, the two of us hauled. The shoes caused infinite trouble; when one fellow tripped, the other would go down too, and that was frequent. The shoes received voluble abuse, even Max joining the chorus of description. But nevertheless, without those shoes, we never could have made it. The trail had innumerable sharp bends [this was the old Tuckerman Trail]; some we could lift the drag around, on others old Max rolled off the drag and crawled around. Many times the ends of the drag dropped into cracks between the boulders on the trail and became wedged there. That first half-mile was indeed a nightmare; we spent four hours covering it.

We were bending all efforts to reach the big brook crossing before dark. The brook was a raging torrent and blocks of ice and snow concealed its holes. Crossing it coming up had been a job, what it would be with Max was another trouble to be met. And it was now after five o'clock and growing dark in the shadow of Washington. Near the Raymond Path we abandoned the drag. Rocks were beginning to crop out through the snow, making the maneuverability of the drag difficult. Here too we removed the snowshoes. With solid places on which to set our feet, it was now possible to carry Max. On easy stretches Max tried walking with us to support him. It must have been agony to him, but he said not a word about it. He hated to have us carry him, he was afraid we would drop him.

It was rapidly growing darker, night would soon be with us, and hurrying as fast as we could (if it could be called "hurry"), we reached the brook crossing with a few atoms of daylight left. How to get over was a problem. We located the most likely spot, carried the packs over, and then came back and maneuvered blocks of ice into somewhat firm positions. Then, while we made a chain of ourselves for him to hold onto, he half crawled and was half carried over. If one of the ice cakes had given way, we all would have been carried down and considerably battered in that furious flood. It was not the small, calm, peaceful brook of summer. But we made it, and not too soon. Night was with us, and the stars came out. Still, for a half-hour or so more the snow kept it fairly light in the woods. We postponed using lights as long as possible.

On the way down Max had told us his story, not all at once, but in pieces, and answers to our questions helped put it together.

After Le Clair left for the valley a terrific gale accompanied by whipping snow made the top uncomfortable. Alone, he began to imagine many things; and the howling gale, rocking cabin and snapping chains were not conducive to clear thought. As the hours passed, the storm increased. His wood was soon gone and he broke up chairs. He attempted to go out and find more wood—the storm picked him up and tossed him many feet. The wind took the storm door off the hinges and it went sailing to parts unknown. He attempted to reach Camden, but could not even crawl against the gale. Sunday finally came, with the storm still raging and no signs of a let-up. He did not know how much longer he would be marooned and began to fear winter was upon him

and he would be caught. So he decided to seek the valley. He fled the Office about noon Sunday, taking only a few raisins for food. He went straight with the wind, as we had assumed. His hat soon blew off, and he wandered about, crouching when he could find shelter. He reached the edge of the Ravine (Tuckerman's) but could not find a way down and, after wandering about some more, crawled into a hole and the snow covered the opening and kept him sheltered. He did not eat snow, even though thirsty, for he "knew what snow does to the man dying of thirst". Day came, he broke out, the storm still raged in all its awful violence. He again searched for a means of descent; thought to go back to the Stage Office and started; but after more wandering the cold and terrific blasts forced him to seek shelter, so he intrenched again and spent a second night on the cone. How he ever withstood the storm is more than anyone knows; neither Joe nor I could conceive of anyone living in it more than twelve hours at the most. Tuesday dawned and still the storm kept up. He was now in such a state of hunger and thirst, with his hands and feet frozen, that he was ready to try anything. So again he approached Tuckerman's, found the most likely spot to descend—and let her go! He had a terrific slide, damaging his shoulder, wrenching his back and hip as he rolled over and over in that awful quarter-mile ride. In the Ravine, he wandered about until he found water. Finding a small open spot behind a boulder at the edge of the brook, he slept the third night there. Waking in the morning to find it a clear day at last, he found strength to call for awhile. Then he slept again, woke up about 1 o'clock, and started calling once more. His first call upon awaking was the one we heard.

He had evidently slid the headwall just a few hours before we stood in nearly the same place. Even if we had found his tracks then, we could not have helped him until we had obtained snowshoes, but it would have hastened matters. As we see it, he took his slide in about the place where the so-called "spring trail" goes up the headwall of Tuckerman's to avoid the snow.

Since then he has told many conflicting tales, drawing upon his imagination (he has a vivid one) to interest reporters and play the public; but we believe ours is the true account.

To return to the descent. We continued to carry him, each of us, and walk where possible. The work was hard for all. Max weighed about 150 pounds, and the two packs combined weighed about 80 pounds, with four unwieldy snowshoes slung awkwardly outside. The time came to use the flashlights; it was real dark now. We came to steep Windy Pitch. Here, while halting to rest, we saw the lights of a car stopped at Darby Field. We signaled to it with our flashlights. Later we found it was a newspaper writer's car and that they had seen us and knew it was us, yet they did not attempt to assist us. For that matter, we would not have allowed anyone to help us with Max; Joe and I were going to finish the job. But the spirit shown by the people below has never been explained.

Off again. Windy Pitch, with its steep drops over logs and roots was a stiff proposition and took time. Max had to be lifted down carefully. He was beginning to lose heart a bit now. When we found him we had told him we were only a little more than two miles from camp, and to his wracked mind we had traveled sixteen miles already. He could not believe us, he thought we were just trying to cheer him up. We had

made our journey lighter all the way down by looking forward to the next landmark: the Raymond Path, the clay bank, the brooks, the Huntington Ravine Trail, One-Mile Boulder, Windy Pitch. The Cascades were the next landmark, and from then on the going would be easy. Together we planned the best course to pursue upon reaching camp, in order to get Max to a doctor as soon as possible. It was decided that Joe would leave us at the Cascade bridge and hurry on to camp, a quarter-mile beyond. It was locked up and cold and we did not know whether anyone would be waiting for us. So Joe was to get the Ford truck ready, radiator filled and engine warmed up. Then he was to open up camp, light up, and heat up some broth to keep Max going in the cold ride to the Glen House.

We made the Cascade bridge, and beyond the rocky stretch Joe went on ahead with the packs. While going on the run he stumbled and put his flashlight out of commission, but he tore right on in the dark. Searchlights shone into his eyes as he reached the camp, autos were parked around, men stepped forward, waiting.

"We have found him and he is alive! Whitey is bringing him in from the Cascades", were his first words. A blank look came over the faces of all, they could not comprehend it. Englehart alive after three days of that storm? They could not believe it.

"Does he need a doctor?" queried someone.

"Sure he needs a doctor", snapped Joe, as he tore around back and unlocked the door. A curious question about a man who had been out three days in that fearful storm! A car was dispatched to the Glen House and Dr. H. H. Bryant of Gorham was called by phone, the driver of the *Boston Post* car making that trip.

Joe lit the lamps and started warming up some broth immediately. Questions were asked and he answered as he could. Meanwhile, no one went to help! I slung Max to my shoulders and started off. It was very easy going but Max required frequent rests, his hip and shoulder were hurting him much. He still imagined we were miles from the camp, and to this day thinks it was two miles that I carried him, all our arguments to the contrary. On the fourth carry we saw lights through the woods; cars had their headlights trained up the trail. It was then about 8 o'clock. About a hundred feet from camp we were met, and not until then was help volunteered. Soon enough we had Max in the Polack's Room, peeled off his wet clothes and wrapped him in blankets. A rosary about his neck no one could remove but himself, and a watch he thought he had lost was found in his boot, where it had slipped down his trouser leg. We gave him some warm broth, and then Dr. Bryant arrived and took charge. The doctor looked him over, rendered all possible aid, and advised moving him to the Glen House at once, where it was warm. Max showed his rosary to the doctor, saying, "That is what saved me", to which the doctor, as he fingered his Masonic charm, gravely assented. So he was carried out, warmly wrapped for the drive, and Joe and I were soon left alone—a welcome relief from the nosey *Boston Post* reporter. Mr. Sibley of the *Globe* was just the opposite—said very little, asked sensible questions, helped us as much as he could, and his account was the most accurate.

We took one look at our battered room, fed the cats, and headed for bed. No food for us—we couldn't eat. A little pre-war First Aid offered

by Elliot Libby was our only indulgence for our wearied bodies. We made a sign, "Don't bother us, we're asleep!" and nailed it on the door, then turned in. But the joke was on us. We were so exhausted—every bone and muscle cried out from the exertion we had been through—that sleep was impossible. We tossed to and fro, talking, until morning came. At 6 o'clock we arose, made a half-hearted attempt to eat breakfast and found we couldn't. What we needed was an honest-to-goodness feed, so we decided to clean up and go get one. We first polished up our dirty camp; it was quite a job. The reporters came back for a few minutes.

About 11 a.m. we finished our clean-up, laid out another array of food to last the cats for awhile (they were beginning to get used to being left alone), put on our touring regalia, and headed down the pike in Ringtail. We stopped in at the Glen House and saw Max, who was feeling pretty chipper. They told us there that they had found him running up and down the corridor during the night, saying that this was the best way to get his feet back to normal. His feet were badly frostbitten, his face and hands nipped, his temperature 100°, otherwise he was doing well.

We then continued to Gorham, invested in a few newspapers and then on to Berlin where we had a shower at the Y.M.C.A. At the Ravine House in Randolph we were royally taken care of by Mr. and Mrs. Bradstreet. A wonderful steak supper, and then we hit for the alfalfa. Before turning in we spent an amusing hour reading various newspaper accounts and learning a lot on how we accomplished the deed. Late next morning we arose after a great night's rest, had breakfast and were prevailed on to stay for dinner. We had supper in Gorham with Mr. Shorey and Mr. Bickford, discussing this and other similar episodes.

Meanwhile Max had been taken to the hospital in Berlin, where it was found necessary to amputate the toes and heel of one foot, and later the toes on the other, on account of gangrene setting in. Here, too, he was very glad to see us when we visited him, and told us many yarns. One was that he discovered gold in the pool near which we found him; another was a proposed trapping trip for the three of us for the coming winter; a third was on how he had been about to make some snowshoes out of branches and tramp to safety just as we found him. He was at the hospital many weeks. Since, he has had artificial members made to replace the lost ones, and manages to get around fairly well on them.

IN MEMORIAM

Sir George Hubert Wilkins, 1888-1958, Honorary Member of the A.M.C., noted explorer and since May 1953 full-time Staff Advisor to OQMG, was born in South Australia.

As a young man he studied engineering at the Adelaide School of Mines, learned flying in 1910, and became an aeronautical photographer, serving with the Stefansson Arctic Expedition of 1913-18 and with the Australian Flying Corps, which he joined in 1917. In the 1920's he served with or was in command of several expeditions to the Arctic and to the Australian hinterland. In 1928, with Lt. C. B. Eielson as pilot, he flew 2100 miles from Point Barrow, Alaska, to Spitzbergen, Norway, in 20½ hours, covering a route just north of the Canadian Arctic Archipelago and Greenland. For this feat, an example of remarkable navigation because of difficult magnetic variations and the constantly changing angles at which longitudinal lines were crossed, Wilkins was knighted. In the same year he and Eielson flew over portions of the Antarctic, discovering several new islands and the fact that Graham Land consisted of two large islands. In 1931 he led the famous *Nautilus* Arctic submarine expedition, and between 1933 and 1936 was manager of the Ellsworth Antarctic expeditions. During World War II he served as consultant to the Office of Strategic Services and to the Military Planning Division, OQMG. After the war he was retained in an advisory capacity by the U.S. Weather Bureau and the Office of Scientific Research, U.S. Navy.

The Quartermaster Research and Development Program, U.S. Army, Natick, Mass., was to be the setting for Sir Hubert's most recent efforts to increase man's knowledge of how to survive under the merciless forces beyond normal human parameters. This research team, on which he played a major role, dealt with the unicellular face-mask for protecting the face against the bitter Arctic wind, clothing for fighting crash fires, personnel shelter to resist the elements including high wind, a mountaineering tent that pivoted always keeping its head to the wind not unlike a sail boat, and snow camouflage—to mention a few typical problems.

It was characteristic of the man to try things on himself before he suggested that others expose themselves to a personal hazard. During his work for the Quartermaster Corps on clothing for fighting crash fires, Sir Hubert displayed this characteristic in a most dramatic way by wearing the prototypes of clothing he had developed within the blazing inferno of a gasoline fire.

Sir Hubert has been the recipient of many citations, awards and gold medals. Among his clubs are the Appalachian Mountain Club, Explorers, Adventurers, and Circumnavigators. He is the author of *Undiscovered Australia* (1925), *Flying the Arctic* (1928), *Under the North Pole* (with Harold M. Sherman, 1931) and *Thoughts Through Space* (1942).

During a last visit with Sir Hubert in November, he mentioned the first voyage under the Arctic ice. To guide and control depth the old *Nautilus* was kept up close and touching the underside of the ice. The excruciating high-pitch shriek and screech within the limited confines

of the submarine was the worst part of the voyage. He remarked that his ancestor, Dr. John Wilkins, in 1637 in his book *Mathematical Magic* had proposed a submarine trip under the polar ice and also presented plans for moon flights by means of rockets.

Sir Hubert also noted that the mountaineering available in the Antarctic polar mountains will be an excellent proving ground for the first American expedition on the moon.

He himself has lived all aspects of mountaineering. Early desires to climb in the Himalayan mountains, and especially the then unclimbed Everest, were never realized.

Sir Hubert had planned to present a lecture to the members of the A.M.C. this May, his one condition being that we must be ready with a stand-by lecturer because he did not know when he might be called away on official business.

Major General Andrew T. McNamara, the Quartermaster General of the Army, stated: "The successful operations of our military forces in both the Arctic and Antarctic today, and for years to come, will constitute a living monument to his memory."

JUSTIN N. KIRK, CLARENCE E. LEBELL

Douglas Mawson, 1882-1958. In the passing of Sir Douglas Mawson in Melbourne, Victoria, Australia has lost her most distinguished Antarctic explorer and scientist and the Club has lost another of its Honorary Members.

Douglas Mawson was born May 5, 1882, in Bradford, Yorkshire, but was taken by his parents to Australia when still quite young. There he grew up and attended Sydney University, where he took his degree as Bachelor of Mining Engineering in 1901. After several years spent teaching chemistry and exploring in the New Hebrides he obtained the degree of Bachelor of Science in 1904. The following year he was appointed Lecturer in Mineralogy and Petrology at the University of Adelaide, beginning an association with that institution which lasted until his death.

The zeal which he had shown in his geological exploration in the New Hebrides was transferred to the Antarctic, whither he accompanied Sir Ernest Shackleton on his 1907 expedition. Early in 1908 he was a member of the party which climbed Mt. Erebus, the 15,300-foot volcano on the edge of the Ross Sea, and then with two others he reached the south magnetic pole while Shackleton and two other companions made an attempt on the south pole. Upon his return from this expedition, Mawson started organizing his own. These efforts culminated in the Australian Antarctic Expedition of 1911-1914, which operated from a base in Wilkes Land directly south of Australia. This was the first such expedition to maintain continuous radio communication with the outside world, a feat which was made possible by a high-powered relay station on Macquarie Island midway between the Antarctic continent and Australia. The high winds encountered on this coast—average velocities of sixty miles an hour for two years with gusts up to 200 miles, with one occasion when a 3000-pound tractor was picked up and carried fifty yards—gave him ample reason for the title of his two-volume book on the expedition's work, *The Home of the Blizzard.*

Upon his return from the Antarctic in 1914, he married Paquita Delprat of Melbourne, by whom he had two daughters. He was in the service during the First World War and did not return to the Antarctic until 1929, when he led the Australian-New Zealand Antarctic Expedition of 1929-1931. He received many honors and medals for his polar work, among them the Antarctic and Founders medals of the Royal Geographical Society, the King's Polar Medal with three bars, and the gold medals of the American, Chicago and Paris Geographical Societies. He was made a Knight Commander, Order of the British Empire, in 1914 and became a Fellow of the Royal Society in 1922. From 1932 to 1937 he served as president of the Australian and New Zealand Association for the Advancement of Science and from 1946 to his death was a member of the Commonwealth Government Advisory Committee.

The cause of science and exploration has suffered a loss in the death of Sir Douglas Mawson, a loss which is not confined to his native land.

KENNETH A. HENDERSON

VARIOUS NOTES

Members and friends of the Club are urged to contribute items and pictures along the lines of Club interests suitable for inclusion under this heading. Material for the December issue should be received not later than September 15, 1959. All copy should be typewritten, double-spaced.

ALPINA

Some Noteworthy Climbs. On August 6, 1958, one month after the successful American ascent of Gasherbrum I (see our leading article in this issue), two members of the Italian expedition based near the Americans reached the summit of Gasherbrum IV (26,000 ft.), in the same massif. The last day's climbing, over white limestone similar to marble, required rock work at times of Class V difficulty, involving the use of pitons, at an altitude of over 25,000 feet. On the descent, near Camp V, one member of the supporting party slid 300 feet down a steep slope of powder snow but managed to arrest his fall and regain the ridge by his own efforts.

A Franco-Swiss expedition to Greenland, in August, 1958, explored a vast glacial massif said to be three times the size of that of Mont Blanc, and made ten first ascents involving climbs from sea-level of 5000-6500 feet and 15-20 hours of going. They reported the climatic conditions good for mountaineering, but said that they suffered greatly from the attacks of mosquitos.

According to a newspaper dispatch of March 16, two East African mountaineers climbed Kilimanjaro (19,430 ft.) in 11½ hours, descending in 6. They wore only shorts, undershirts and sneakers.

On November 30, 1958, two young Genevese rock climbers made a night ascent of the west face of the Salève, a route consisting for the most part of passages requiring artificial aids. Their time, 1 hour 45 minutes, would have been remarkable even under normal conditions. They were equipped with special flashlights and even had lamps attached to their shoes. They justified their exploit by emphasizing the importance of experience of this sort for rescue operations.

Among expeditions planned for 1959 is one of an Austrian party which will attempt Dhaulagiri (26,795 ft.), the next-to-last unclimbed 8000-er, which has already repelled several assaults. The expedition left Europe in February.

There will be several other expeditions to the Himalaya—American, British, French, Swiss and Japanese—if governmental permission can be secured. One of the more interesting is an all-feminine expedition of various nationalities (British, Belgian, French, Swiss and Indian), under the leadership of Claude Kogan, to repeat the ascent of Cho Oyu (26,750 ft.), which was first climbed by two Austrians and a Sherpa in 1954. A British expedition will again try Ama Dablam (22,500 ft.), an extremely difficult peak of rock and ice which a party of last year reported to be impossible. The mountain was first viewed by the

American-British expedition of 1950, led by Charles S. Houston, which made the initial reconnaissance of the south side of Everest.

A nine-man Swiss expedition will spend two months or more in the high Andes of Peru. They intended to leave in the middle of April.

The ascent of the face of El Capitan, in Yosemite National Park, was completed on November 12, 1958, by Warren Harding, George Whitmore, and Wayne Merry of the Sierra Club, according to a special despatch to the *New York Times*. The perpendicular face, rising 3604 feet above the valley floor, was first attacked in July, 1957; on successive days, requiring in all forty-six days of climbing, the party, together with assistants, set their iron up higher and higher.[1] The final assault took thirteen days, with the climbers returning each night to a small tent pitched at a height of 2100 feet above the valley. The last 175 feet required twenty-four hours; they were finished at night, by the use of miner's headlamps, in the face of worsening weather.

The climb has been called "the longest, steepest tension climb in the history of mountaineering". Altogether, it required the setting of 675 pitons and 130 expansion bolts, from which more than 4000 feet of nylon rope have been left hanging. (Twenty-five expansion bolts were set by Harding during the final night.) All this hardware has now to be removed again, under a stipulation made by the chief park ranger before permitting the climb.

The detailed story of this magnificent climb will be awaited with the very greatest interest in all mountaineering circles.

Disaster at Lituya Bay. Those who read APPALACHIA twenty to thirty years ago will recollect beautiful Lituya Bay, 100 miles west of Juneau, as the landing-spot where many of the early attacks on Mt. Fairweather and Mt. Crillon began. I still feel that it is the most entrancingly lovely spot I've ever visited.

A great local "tidal wave" of unknown origin swept the bay on the morning of October 27, 1936, ripping all the tall spruce trees off the slopes at its head to an altitude of several hundred feet. So violent and unusual was this disaster that nobody could definitely fix its cause. There was no disturbance at all in the open ocean nearby, and the damage was entirely confined to the bay itself. Geologists felt that the only causes could have been an earthquake or the bursting of a huge unknown ice-dammed lake—or both.

Those of us who know the bay well and who saw the extent of the destruction caused by the 1936 wave were inclined to take a dim view of ever returning to camp on its shores again, as two of our base-camp sites had been inundated by a roaring flood at least 200 feet deep!

Twenty-two years slipped by and the 1936 wave had been virtually forgotten when, on the evening of July 9, 1958, a fantastic new disaster took place which utterly dwarfed its predecessor. When I first heard about it in Europe, I couldn't believe what I was told—a "tidal wave *1800 feet high*" was, of course, impossible. Somebody must have slipped an extra zero onto the end of 180. But when the true facts emerged,

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[1] See the frontispiece of APPALACHIA for December, 1957.

Bradford Washburn

LITUYA BAY AND MOUNT CRILLON

Miriam Underhill

NORTH KINSMAN, KINSMAN POND AND THE CANNON BALLS

From South Kinsman

they proved to be considerably more extraordinary than fiction. There were also a number of living eye-witnesses in addition to indisputable physical evidence to show just what happened this time.

At 10.17 that night a violent earthquake shook that whole part of the Alaskan coast and caused serious damage as well as loss of life at Yakutat, 90 miles northwest of Lituya Bay. At the same time, apparently, there was movement along the entire length of the great Fairweather fault, which runs from near Cape Spencer (under water), through Crillon Lake, then across the head of Lituya Bay and northwestward along the foot of the big peaks of the Coast Range (inside the coastal hills) all the way to the Yakutat region. Measured movement of this fault at one spot (Crillon Lake) was 21½ feet laterally (NW) and 3½ feet upward!

Some think that the fault actually "opened its jaws" for a few moments, swallowing a vast amount of water. Then, clamping together again like a gigantic vise, they might have squeezed the water out in a colossal jet, so powerful that all the trees were swept off the southeast shoulder of Billy Goat Mountain at the head of the bay to a height of fully 1800 feet—cleaned right down to bedrock. Others feel that the earthquake itself shook off this vast mass of debris, thus starting a huge landslide which resulted in the "tidal wave". Whatever the actual cause, this wave continued on down the bay, rolled around and partly over Cenotaph Island, leaving not a trace of Jim Huscroft's cabin where we had all lived so frequently and peacefully in the early thirties!

A party of climbers from British Columbia who had just made the second ascent of Mt. Fairweather had flown out to Juneau from a camp on the west shore of the bay early that evening. The wave and debris roared across their campsite 50 or 60 feet deep. If their airplane had not arrived to pick them up a day ahead of time because of threatening weather, nobody could possibly have survived to tell the tale! One boat, passing the night in the normally peaceful bay, was carried right over the rocky morainic spit at its mouth and swamped in the ocean outside, its two owners drowned. Another boat, nighting in Anchorage Cove, was also swept over the spit 50 feet above its bouldered crest and foundered in the ocean, but its occupants miraculously survived, as did a man and his young son on another fishing craft which was anchored for the night southeast of Cenotaph Island, a mile inside the bay.

The full story is now being investigated in detail by experts of the U.S. Geological Survey who have interviewed most of the eye-witnesses and studied the evidence on the spot. *The Alaska Sportsman* for October, 1958, carries two thrilling accounts, as well as a number of pictures of the aftermath of the disaster which leave no further doubt as to the magnitude of what happened. *Science,* February 13, 1959 (pp. 394-5), gives an excellent scientific appraisal of this event and includes one remarkable picture.

I'll never want to visit Lituya Bay again, except in a seaplane—and if I do, we'll keep the motor warm and be ready for a mighty speedy take-off if necessary!

H. Bradford Washburn, Jr.

Jangyaraju. The high point of our three-months' expedition to South America last summer, during which we conducted geographic investigations and anthropological studies in several cultures, was the first ascent of Jangyaraju, 18,655 feet high, in the Cordillera Blanca of Peru. A first attempt failed because of illness in our party. On a second attempt Joe Muck and I left Huaraz early in the morning of July 22 with horses. After setting up camp at the end of the maintained track to the glacial lake, at 15,000 feet, we moved over a very large moraine and established a dump of climbing gear at the base of the glacier, then climbed over the dangerous ice cascade, placing pitons (a special type made of angle aluminum) and safety ropes, and established a second dump high on the cascade. Back at Lake Camp we enjoyed a peaceful night's rest.

The next morning we quickly climbed over the moraine to Dump No. 1, picked up our gear and climbed onto the glacier. The safety lines were frozen tight and proved secure. What had taken us hours before now took us but minutes. At 10.30 a.m. we were above the campsite of the first attempt at 16,000 feet and going strong. We cached most of our equipment here and, after a light lunch, packed our summit gear and climbed upward.

Alberto, a serious Peruvian climber, had told us that the true peak of Jangyaraju had not been attempted, because of the "impossible apron of crevasses and cascades" on three sides and a very steep rock face on the fourth. We disregarded his advice to try the rock side and chose a route over the snowfield instead. At 17,200 feet we found ourselves entering a heavy concentration of crevasses—I had not seen its equal for complexity and the size of the individual crevasses.

Of perhaps a hundred crevasses crossed during the assault only three presented complex climbing problems. Each of these was 50 feet wide and from 50 to 250 feet deep. Each was complicated by a compressed mass of seracs, ice pinnacles, cornices, ice slopes and false floors and buttresses.

The first was crossed by working into it and across a false floor to the opposite wall. Here, a snowbridge sloped to the lip of the crevasse with a three-foot gap in its architecture. The extreme angle of the bridge made the jump very interesting. The third crevasse offered a similar solution.

Once inside the second giant crevasse we found a 65° bare ice slope that led to a 6-inch ledge, which connected with the surface of the glacier. Since the ice slope offered but little exposure, the total danger was minimized. It was the scene of a slight accident later, though, when Joe lost his footing on a glissade and a crampon pierced his left foot, forcing him to give up the rest of the expedition and return directly to the United States.

From the top of the crevassed area our route led to a rock ridge which joined Jangyaraju to its neighboring peaks. All sides of the top pyramid are composed of steep rock. We spent about 45 minutes on the rock climb and at 2 p.m. we were on top of Jangyaraju; Joe was the first to reach the summit of this 18,655-foot virgin peak. Jangyaraju offered us a challenge and a conquest. Its beauty and difficulties are a permanent part of our fond memories of Peru.

IVAN L. JIRAK

Mountaineering in Russia. An article by Hans Schwanda, of Vienna, in *Der Bergsteiger* for January 1959 gives a detailed account of this subject. We warmly recommend the article to everyone interested.

Like everything else in the U.S.S.R., mountaineering is under the rigid control of the State. For some years, however, it has enjoyed especial favor and encouragement, together with liberal financial support, because of its supposedly great ethical value as a form of sport which requires strength, endurance and a certain degree of heroism.

The prospective climber must begin by passing a general physical test in running, jumping, swimming, etc., which qualifies him as "fit for work and defence". Then, if he has reached the age of seventeen, he can join a mountaineering section of his local industrial sports club, where, in the vicinity of his home town, he will receive elementary theoretical and practical instruction, the latter including walks and ski runs, with bivouacs in the forest and exercises in the crossing of rivers. He is now ready for a trip to a mountaineering camp for beginners, in either the Caucasus or Central Asia.

For this trip he receives a certificate good for a twenty days' sojourn and representing an average value of 1150 rubles, of which however the individual himself pays only 30%. In addition, the camp provides him with a complete outfit of clothing and equipment, and with food for all his climbs. However, he becomes subject to a host of regulations. All climbs are provided with ratings, which depend not only upon the technical difficulty of the route but above all upon its length and arduousness. There is a scale of ten such ratings. Climbers, in turn, are divided according to experience and proficiency into four classes, of which the topmost is that of "masters of sport". The coming mountaineer must work himself up through these classes one by one; to pass to the next higher one, in each instance, he must have done a certain number of climbs of specified grades of difficulty, and until he has reached a given class certain climbs will be absolutely prohibited to him. The requirements for becoming a "master of (alpine) sport" are very high indeed, and yet there are said to be 600-800 of these "masters" in the U.S.S.R.

Great emphasis is placed upon safety measures. The smallest climbing party consists of four men; on difficult climbs six or eight generally take part. Before starting they must fill out a prescribed form, giving their names, the objective, the time presumably required, and a list of their equipment and provisions. The climb is then discussed in detail with the camp management, and the leader given a description of it, while he himself prepares a route sketch. If the climb is a difficult one the party is provided with observers, whose function it is to view their progress. These observers, and on large undertakings the climbers themselves, are in radio contact with the base camp, so that in case of need rescue operations can get under way at once. Such operations are also set in motion automatically if the climbers do not return within twenty-four hours after their announced time. If they over-run this twenty-four-hour period for insufficient reasons they become subject to severe disciplinary measures.

It will be evident that while the system denies completely to the individual the chance to use mountaineering as a means of escape from the social pressures of everyday life, it has the merit of preventing the sort of accident, all too common in the West, where a young climber,

inexperienced or ill-equipped, becomes the cause of a dangerous and expensive rescue operation for which he can in no wise be brought to account, financially or otherwise.

In recent years Soviet climbers have made many new routes—in particular, range-traverses on a grand scale. Although they lack the refined equipment and technique of the West, they have unbelievable endurance and determination, and their insensitivity to cold and exposure borders on the legendary. They are said to be preparing an expedition to climb Mt. Everest without the use of oxygen; the select personnel for this enterprise are supposed to be undergoing a year of intensive training in the Pamir.

The article in question contains many other details of great interest.

ROBERT L. M. UNDERHILL

Antarctic IGY Activities, 1956-1958. In November, 1956, I sailed from Seattle, Washington, for the Antarctic on the icebreaker USCGC *Northwind*. After two pleasant stops, one at Pearl Harbor and the second in New Zealand, we headed south for the Ross Sea.

I was an IGY glaciologist; there were three of us and seven other scientists, heading for Wilkes Station, which was to be located in the Windmill Islands at 112 degrees east longitude. Before we could sail to the Windmill Islands to build Wilkes Station we had to go to McMurdo Sound to leave some supplies. While we were there I spent Christmas Eve at Captain Scott's hut on Cape Evans under the shadow of Mt. Erebus, the only active volcano in the Antarctic. I ate sugar, biscuits and cheese that had been there since 1910; they tasted as fresh as ever.

Our next job was to sail up to Cape Hallett and move two acres of penguins so we could build a base. The penguin moving took all of one day. While the Seabees built the base some of us made some geological reconnaissance trips. Towards the end of our stay we had a couple of tense days because a storm had blown ice in on us and was crushing the *Arneb,* one of our cargo ships, and holding the *Northwind* so she could not aid the *Arneb.*

We left Cape Hallett in mid-January and sailed around to the Windmill Islands. After spending about a week trying to get through the heavy pack-ice we finally reached the Windmill Islands. This was the only exposed land for about 400 miles east or west of us. While the base was being built we had to hunt seals to feed our dogs. Carl Eklund, our chief scientist, banded skuas, which he was studying; and we made the first trip inland on the continental ice of Wilkes Land. We were trying to find out how far inland we must go to have enough snow to dig a 120-foot pit; at such a spot we would build our small inland base. During the winter the three glaciologists would live at this base, dig their deep pit in the snow and take surface meteorological records.

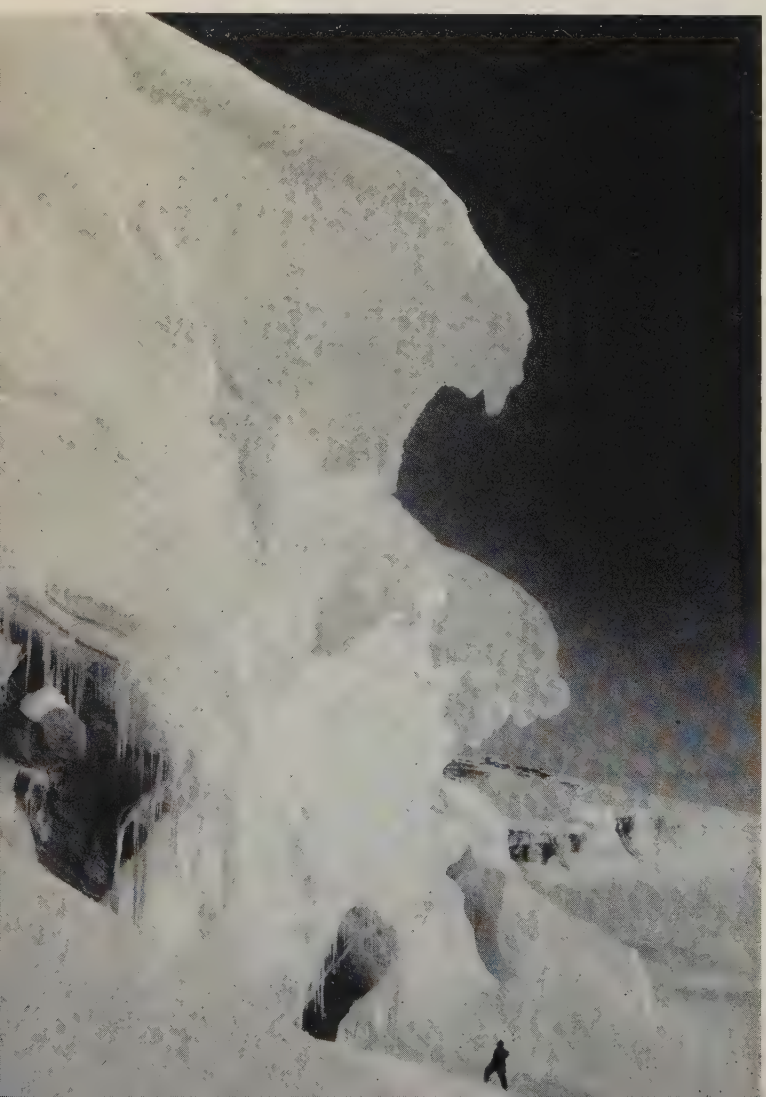
The ships left us in mid-February and it would be a year before we should see any new faces. There were twenty-seven of us at Wilkes, ten scientists and seventeen Navy support men. The first week was spent in unpacking supplies and getting everything at the base organized for the coming of winter.

J. R. T. Molholm

ICEBERG FROZEN IN SEA ICE

J. R. T. Molholm

ERODED ICEBERG IN OPEN SEA

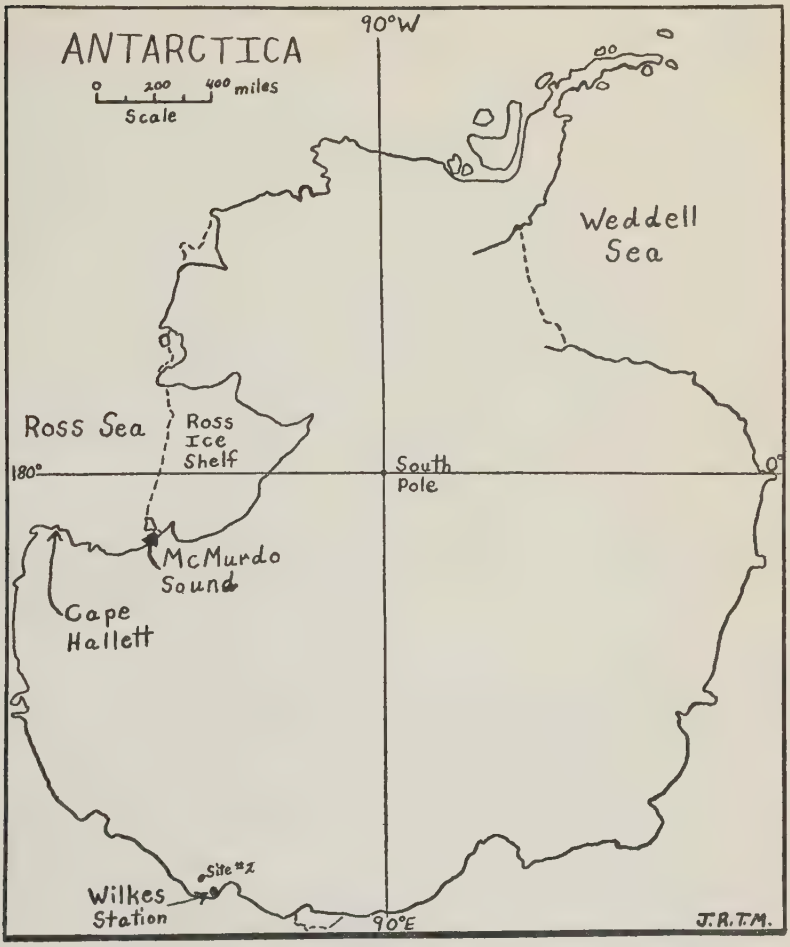


(Above)
MOUNT EREBU
(13,200 feet)
With the
Barne Glacier

Photos by
J. R. T. Molholm

(Left)
EDGE OF
CONTINENTAL
ICECAP

During the second week the scientists started their various programs. We, the glaciologists, built a weather station two miles inland on the ice-cap, drilled fifty feet into the ice and put thermohms at various levels so we could take the temperature of the ice. Our next project was to journey twenty-seven miles south of the station and set up tri-



angulation stations on Haupt Nunatak and movement stakes on the Vanderford Glacier, which was just south of the nunatak. We surveyed the stakes and headed home.

The other disciplines—meteorology, seismology, geomagnetism, cosmic rays, aurora, and ionospheric physics—had most of their equipment set up. Our next job was to build our inland station, called Site Two. Early in March, six of us started inland in three weasels pulling three sledges of equipment. By evening we had traveled fifty-one miles and reached an elevation of 4000 feet; here we set up our 16x16-foot Jamesway hut. This little hut was to be home for three of us for three months.

In the next few days we set up our meteorological equipment and set out a net of relative-movement stakes around the hut. We then went back to Wilkes Station to finish up things along the coast; also, we started to mark the trail to Site Two with empty oil drums and to move more supplies inland. By early May we were ready to move to Site Two for the winter. By this time the hut had been partly drifted over and we had some 300 feet of tunnels and rooms leading from the hut to the spot where we would dig the deep pit.

The purpose of the pit was to study the annual layers of the snow—its density, grain size, thickness and temperature. The digging was a slow job. But mechanical troubles with our weasels and generator, and storms (sometimes lasting nine days) made the deep pit a longer project than we had intended it to be. It was still incomplete in early spring when two of us returned to Wilkes Station for a short time. By late spring the pit was 125 feet deep and we could return to the main base and work along the coast. In order to have a complete set of meteorological records we took turns staying at Site Two for two to three weeks at a time. While one person was at Site Two, the other two were mapping raised beaches and resurveying the movement stakes on the Vanderford Glacier. This was moving at an average of 6.2 feet per day. We also did a geological reconnaissance of the Windmill Islands, since the whole area was unexplored. On Sundays we helped Carl with his zoological program—counting penguins, banding more skuas, and branding seals.

At the end of January, 1958, the ships came in and we received our first mail in thirteen months. After a few days of showing our relief scientists what we had been doing, we sailed north to Australia. It was a very pleasant contrast, but I hope to sail south again to the Antarctic.

JOHN R. T. MOLHOLM

Miscellany. The London *Times* of December 7, 1958, reported that the Nepal Himalayan Society had sent a memorandum to the Nepal Government asking that laws be made to prevent Sherpas from other countries coming to Nepal to take part in foreign mountaineering expeditions. Most expeditions have preferred to have the services of Darjeeling Sherpas, whose reputation is worldwide. It was considered doubtful whether any such regulations would be made immediately to interfere with the right of an expedition to select its assistants [thereby tending to discourage such expeditions]. All expeditions now pay heavy fees for permission to visit the Nepal Himalaya, either for mountaineering or for scientific exploration.

The *Times* also reported, on January 1, that according to the Nepalese Foreign Ministry an Italian, Sig. Godwin Ciani, who carried out a month's scientific exploration in a region north of Katmandu, had mentioned seeing a strange animal, five feet high, just outside the cave in which the members of his party were camping. Having heard the sound of the animal walking outside, he went out of the cave and saw it staring at him. It was gone when he made a further investigation with his colleagues. Next morning he found footprints like those of a man.

Swiss glaciers continue to disgorge the bodies or remains of climbers

who disappeared about fifty years ago. At the end of August, 1958, the skeleton of a young man who fell into a crevasse in 1901, while climbing alone, was found at the end of the Scaletta Glacier, near Davos; and in September the body of a clergyman who was last seen climbing alone on the Galenstock, in 1906, was discovered in the Rhone Glacier, in a perfect state of preservation.

In the ten years 1946-1955 the *Bergwacht* (mountain patrol) in the Bavarian Alps recovered the bodies of 647 dead persons, rescued 12,712 skiers and 3,216 climbers who had met with accidents or were otherwise in need of help, and rendered first aid to 47,807. Young people made up a large number of all these. The figures are causing much concern.

On August 16, 1958, there were a record number of people on the summit of the Matterhorn—150.

The great event of the summer of 1958 in Zermatt, according to a writer in *Die Alpen,* was the shooting of scenes for Walt Disney's mountaineering film drawn from J. R. Ullman's novel, *The Banner in the Sky*. The story deals with the events of Whymper's conquest of the Matterhorn in 1865, but in the form of fiction, with assumed personal and place names. However, the costumes of the period were carefully copied, the old street of Zermatt was reconstructed as faithfully as possible, and certain properties were supplied by the Zermatt museum. Besides the main actors, the scenes required the participation of numerous guides and very many supers (residents and summer visitors).

WINTER CLIMBING

The second annual Harvard Mountaineering Club Winter Traverse envehicled for the Presidential Range of the White Mountains on January 29. We planned to spend the long weekend following mid-year examinations camping and climbing in the northern end of the range. Being well aware of the treacherous and severe weather conditions in the Mt. Washington region during the winter months, we were equipped for all contingencies: we carried snowshoes and technical ice-climbing gear, including crampons, axes, and even a couple of ropes. We were prepared for temperatures down to −50°F. An advance party of three had gone up to Crag Camp the day before, presumably in order to pack out the trail.

We tied packs by Coldbrook Lodge in Randolph and set forth. The recent thaw had made previous trail-packing quite unnecessary. Snowshoes were useful in the lower woods but, before reaching Crag Camp, we found crampons more advisable. When we rejoined the advance party we heard that they had taken advantage of the clear weather and near-freezing temperature to climb Mts. Adams and John Quincy Adams.

The next morning we awoke to the incongruous patter of rain. By shortly after noon the thermometer had dropped below freezing and the wind was picking up. Planning to camp as high as feasible above timberline, we sallied forth from our cozy shelter into the teeth of the storm. We found a relatively protected site about a quarter of a mile beyond the last trees, just above the headwall of King Ravine. Here, in the sweeping wind and fog, we pitched our camp, two four-man Logan-

type tents and a two-man mountain tent, with all flaps heavily weighted by rocks. When we turned in at 9 p.m., it was windy but still warm.

In the morning it was clear, much colder, and still blowing hard—distinctly face-mask weather. After a hearty breakfast and with frequent intermissions for foot-stamping, we struck camp and, leaving our packs by a large cairn, proceeded upwards. The wind was fierce on the final pyramid of Mt. Adams, gusting about 70 miles per hour, and we staggered grotesquely on the ice-covered boulders despite crampons and ice-axes. On reaching the summit one member of the advance party remarked that it was a quite different mountain from that of two days previous. We quickly descended, retrieving packs on the way. Below-treeline conditions were palpably more moderate, and we shed face-masks and other extra clothing. The thermometer at Crag Camp registered a balmy −20°F. A conservative estimate put the morning temperature at −25°F., a drop from the previous evening of some fifty degrees in eight hours.

MICHAEL WORTIS

The Four-Thousand-Foot Peaks in Winter. A start has been made during the past year on an attempt to extend the winter-climbing activities of the Club to the higher and more remote peaks of the White Mountains, those peaks that require a properly equipped party, careful planning, and a certain amount of hard work for their successful ascent under winter conditions. Owing to a late start in organization, trip notices could not be placed in the *Bulletin* and recourse was had to a mimeographed program circulated among those with known or suspected interest in winter climbing. Sufficient response was obtained to run four climbing trips (up to the date of writing), in the course of which seven 4000-foot peaks were climbed, all involving a night away from civilization in A.M.C. huts or shelters, or tents.

The general plan has been to start off with relatively short and easy climbs and gradually work up to more difficult ones as skill and physical conditioning improved. The first climbs of the season were Cannon and the two Kinsmans from the A.M.C. hut at Lonesome Lake, where the ascents were materially aided by careful pre-season scouting and blazing. Two weeks later a party of ten packed into Galehead Hut and five of these had enough energy left to climb North and South Twin the following day in swirling cloud and snow. On this trip the difficulties inherent in overloaded packs and poor snowshoes were revealed to some of the climbers for the first time. A projected three-day traverse of the Moriah-Carter-Wildcat range had to be abandoned after an ascent of Mt. Moriah and a cold night spent at Imp Shelter. The temperature fell somewhat lower than on previous climbs, −13°; and the equipment of some, adequate for milder weather and short one-day climbs, proved unsuited to these more severe conditions. The culminating trip of the winter was the ascent of Owl's Head in the Pemigewasset wilderness by the combined efforts of two parties, one camping Saturday night in a tent high up Lincoln Brook and the other staying at a shelter closer to the highway (see below).

Much has been learned about the art of winter climbing and camping, equipment and physical stamina have been tested, and skill in

Merle Whitcomb

Merle Whitcomb

DESCENDING THE OWL'S HEAD SLIDE

March 8, 1959

PANORAMA LOOKING EAST FROM OWL'S HEAD, SHOWING TWO LARGE GLACIAL CIRQUES

Dr. Erwin Raisz points out that in each case there is clearly visible the U-shaped form of the glacial trough, although modified later by a post-glacial notch at the bottom.

route-finding has been developed. It would appear that more care must be taken in the future to see that climbers are properly equipped, both in clothing and snowshoes, before starting out. Certainly the importance of keeping the total weight of the pack down by a ruthless weeding out of non-essential items must be more thoroughly emphasized.

Next winter will see an eager nucleus prepared to tackle more challenging climbs such as the summits of Bond and Hancock.

ROBERT L. COLLIN

Owl's Head in Winter. The 4000-footer group in the A.M.C. has injected a spirit of exploration which has fostered a number of trips to remote peaks. These trailless peaks should remain difficult to ascend even in the summer, but in the winter some of them have been deemed too difficult for a regular trip. Because of distance and weather conditions, a trip to such a peak as Owl's Head in the Pemigewasset wilderness is a major undertaking for two winter days. Even in three or four days the effort involved in reaching it is unusual.

Notwithstanding such drawbacks, a group under the leadership of Bob Collin decided to make an attempt on the true summit of Owl's Head early in March when snow conditions would be a bit more reliable. The trip was put in as one of the high points of the newly-inaugurated winter-climbing section of the Club, and it turned out to be one of the major achievements of the group.

Thanks to help from Robert and Miriam Underhill and Merle Whitcomb, Bob Collin, Dave Sanderson, Charlie Fay and Bill Biddle were able to make the ascent on Sunday morning, March 8, 1959. This, according to all those concerned, was the first "sporting" ascent of Owl's Head in the winter and perhaps the first winter ascent of any sort. After the climb we could all see why the peak had not been attempted in the winter.

The Underhills had made a preliminary trip, part way in, a couple of days earlier, which gave us a trail for the snowshoes. The seven of us now started from the dam above Lincoln at 9.30 Saturday morning. It was windy and about freezing all through the morning, but the temperature began to drop rapidly in the afternoon, with no let-up in the wind. We reached the Franconia Brook Shelter by lunch-time and then left the Underhill party for a long and tedious snowshoe slog up to the foot of the slide on the west side of Owl's Head. Here we made camp about 5.00 p.m. The distance to that point was about ten miles.

We were off at 7.30 on Sunday morning with the temperature at 1° above. The night clouds had cleared and although the wind was still very high it appeared certain that the day would be magnificent. At the bottom of the slide we took off our snowshoes and started the slow job of kicking steps up the slide. At the top of the slide, we followed the Underhills' red ribbons (placed there last summer), and after some vigorous crashing through the woods we reached the summit at 10.00 a.m. Where we could see through the trees the view was magnificent, especially to the east towards the Bond cliffs.

On the way down we met the Underhills and Merle Whitcomb, who reached the summit at about the time we finished our lunch at the campsite. This was around noon, so we headed out without delay. At

5.00 we reached the car, but I think for everyone it was the longest snowshoe trip (about 24 miles altogether) that he had been on and very close to the most tiring.

WILLIAM W. BIDDLE

Avalanche on the Little Headwall. It would never happen! This was the opinion of experienced mountaineers on the probability of a major avalanche occurring on Tuckerman Ravine's Little Headwall. Three young men now know this statement can be modified. Here's what did happen.

On one of the fleeting winter's most beautiful days, Thursday, March 5, three men headed for Tuckerman. Experienced, they knew that dangerous conditions existed in the Ravine. A study of preceding weather conditions—heavy snowfall and high winds—and the present warm temperature and bright sun told the tale of a high avalanche-hazard. With this information in mind they headed toward the Ravine via the Little Headwall. Hillmans on the left looked ready to slide. The tell-tale gray hue of the lower snowfields gave evidence of windslab formation and resulting avalanche build-up.

The climbers ventured onward up the Little Headwall, realizing there was quite a windslab under their snowshoes but secure in the knowledge that the headwall had never had a serious avalanche. The lead man began his last traverse to the top. The other two men in the party were on the extreme left, working their way upward on the edge where bushes gave purchase to their snowshoes. As the second man stuck his ice-axe in the snow for support, he noticed a break in the surface from his axe past his right snowshoe. The crack began to widen, the snow began to slide. *Avalanche!* The lead man began his ride on the top of a large slab. The others, anchoring themselves in position on the very edge of the slide, watched their partner in the event the avalanche buried him as it broke up. However, using a swimming motion (good technique in this situation), he managed to stay fairly high in the snow. He was uninjured and freed himself easily. This avalanche provided an interesting experience for those involved.

The avalanche was a soft-slab type with the slab about three feet thick. The fracture line ran across the entire headwall along the point of compression. The terminus was the rocks and shrubs at the base of the headwall.

HENRY SWAN, *Assistant Ranger*

Zealand Falls Hut in Winter. Friday evening of the weekend of March 28-29 we drove the Sub-Sig Outing Club bus to the end of the Zealand road, where we spent the night. There were eight of us in the party, a combination Appalachian Mountain Club and Sub-Sig Outing Club trip of winter mountaineering and ski touring. Saturday proved to be a beautiful day. We arose at 6.30 a.m., made breakfast, split up the duffel and were on our way at approximately 9. During the night there had been a fresh fall of about two inches of powder snow. The conditions were perfect. Six of us used skis and the other two snowshoes. We arrived at the hut at 12 noon and were very thank-

ful that the Underhills and Merle Whitcomb, who had been there ten days earlier, had dug a hole down to the rear door. The snow was up to the eaves of the hut. It was quite dark inside, as the snow completely covered the windows.

After lunch we decided to attempt to reach the ridge on Zealand Mountain. There were two possibilities: we could climb on skis with skins, or we could attempt to climb on foot. We decided on the latter. The snow was quite firm, and for the most part we sank in only ankle-deep. In a few places, however, we went in up to our hips. At 2 p.m. we reached the ridge. From there we walked over to look at the view in the Notch. There wasn't a cloud in the sky. The snow on the ridge was wind-packed and therefore firm. We started across the ridge toward the peak of Zealand Mountain. The wind was blowing quite hard. At first the going was easy, then as we reached the base of the first rise the snow became quite soft and we sank in. We reached a point just beyond the first rise. The time was then after 3, so we decided to play it safe and forego attempting to reach the true summit, which is obscure even in the summer.

In the hut that night, after supper, we sat around the fire and sang songs for awhile. Two of the group slept outside and selfishly watched what they termed a tremendous display of northern lights. They said it was too cold to get out of their sleeping-bags to come in to tell us. I have to admit they did have a point, as it dropped to 3 below zero that night.

Sunday (Easter) morning we arose quite late, about 8 a.m. By the time we had managed to cook breakfast and get packed, it was 10. Four of us decided to try to climb Mt. Hale. Again we went on foot, up the Twinway and Lend-a-Hand Trail. After about two minutes all indications of a trail disappeared. (Of course this also happened the day before on Zealand Mountain.) We headed in what we thought was the right direction and followed the ridge to the small peak just to the south of Mt. Hale. Snow and walking conditions were just about the same as they were on Saturday. We reached the small peak at about 12.30 p.m. and decided that as we were so close we would go on to Mt. Hale, which we reached in another 45 minutes. This day was another perfect one. Not a cloud. To the northeast and east the entire Presidential Range was spread out before us. It was 3 before we returned to the hut. We quickly heated some soup, drank it, packed our gear and started for home. Skiing out was very pleasant, as the snow on the trail was quite firm due to our having packed it down on the way in; also, there is a slight downgrade back to Rte. 302. Next year we plan to do more winter mountaineering. I certainly hope that if I lead any trips at that time I shall have a group as enthusiastic and capable as I had on this trip.

GEORGE L. HOLMES, JR.

ROCK CLIMBING

Norwegian Jotunheimen. The area known collectively as the Western Jotunheim is so readily accessible from either of the two main centers of Norway, Oslo and Bergen, that it is surprising it is not much more popular as a climbing center than it seems to be. At least this was the

impression produced on the three of us, Dick Buel, Jim Rogers and myself, during the course of a pleasant two-week sojourn in the Hurrungane and Smörstabbtind groups early last summer. Two things must be admitted at once; first, that we were there from June 27 to July 9, which is very early in the accepted Norwegian climbing season, and it had been a very snowy winter to boot; and second, we were fortunate enough to have a period of generally superb weather, a rarity in these parts, during our stay there. This combination meant that while at one point we enjoyed four straight days without a cloud in the sky, at the same time there was no one else around. During our ten days of climbing we met only two other climbing parties, both on the same (and penultimate) day. And this in a location where one lives in a modern hotel served by buses three times per day, connecting in under eighteen hours with Oslo or Bergen. Having a range all to oneself is a pleasure that one somehow does not associate with European climbing, and it came as a welcome surprise.

The Hurrungane peaks, while not on the scale of the major Alps, compare favorably with the Selkirks, Wind Rivers, or Tetons, providing many interesting rock climbs and some ice and snow as well. The only disadvantage is that if one chooses to luxuriate in the hotel at Turtagrö, a rather long walk (four to six miles each way) is required to reach technical climbing. Most peaks have at least one very easy route, which means they lend themselves well to traversing, so we proceeded to traverse the Dyrhaugstind and later the North and Middle Skagastölstind, which turned out to be a sixteen-hour day. The above is not true, however, of the highest in the range, Störe Skagastölstind, which from any angle requires a rope and belays. Only 7723 feet above the sea, this Matterhorn of the region is nonetheless an ascent of about 5000 feet from Turtagrö and represents a very satisfying day's work.

After seeing Jim off on his way to Russia, Dick and I moved over the height of land on the Sognefjell road to Krossbu, another hotel, within two hours' walk of the center of the Smörstabbtind group. These are smaller, sharper peaks rising 500 to 1000 feet out of a broad, dead glacier system, and we found very pleasant Class IV rock on Skeiia and the S.E. ridge of the Störe Smörstabbtind. Returning after three days to Turtagrö, blistered by the 20-hour-a-day sun but content, we culminated the trip by reaching the top of the Störe Skagastölstind by one of the easier routes, with a view magnificent from Galdhöpiggen to the Jostedalsbre. Two nights later, on the boat to Bergen as the rains came down, we agreed it had been a fortnight well spent.

John S. Humphreys

SKIING

Sugar Bucket Slalom. The usual festivities in connection with the arrival of spring at Cardigan, the annual sugaring-off party and the Sugar Bucket slalom, were duly celebrated on the weekend of March 21-22. Inasmuch as there is a certain amount of confusion about the special rules governing this ancient rite of spring, perhaps a recapitulation may be in order. The race was first run at Cardigan in 1941; it has always been a "fun" race in contrast to the more serious events

such as the Junior A.M.C. Championships. All persons present are supposed to race no matter what their ages may be, although only A.M.C. members are eligible for prizes and (for the winners) for having one's name engraved on the Sugar Bucket Plaque. There are two divisions, one for novices and one for advanced skiers, with men's and women's subdivisions in each; the entrant usually determines which one he should enter. A winner of the novice class may not enter this class again, while a winner of the advanced may run only for time or as a forerunner.

The races this year, run on two separate courses set by George Sawyer on the west slope of the tow area, fortunately had excellent snow conditions varying from corn at the top to granular at the bottom. Here are this year's winners:

Novice Division	*Advanced Division*
Sue Chadwick	Priscilla Smith
Mel Osborne, Jr.	Prescott Smith, Jr.

A.M.C. Junior Championships. Sunday, March 15, 1959. This race was held with perfect weather and snow. There were over thirty entrants even though some older contestants had been unintentionally eliminated by a conflict with College Boards. As before, the best of two runs over the same course counted. The separate courses for each class were quite stiff and the times fast, showing the increasing skill of our juniors.

The Midget Race, 8 and under, attracted fewer entrants than last year.

Boys		*Girls*	
	MIDGET RACE		
1. John Butman	18 sec.	1. Peggy Potter	21.8 sec.
		2. Ellen Davis	22.
		3. Nancy Gifford	2:08
	JUNIOR DIVISION (ages 9-12)		
1. Steve Haas	25.0 sec.	1. Kathy Porter	27.2 sec.
2. Skipper Stritter	26.1	2. Anne Potter	33.1
3. Jimmy Young	28.4	3. Martha McClintock	34.0
4. Brad Butman	29.4		
5. Jimmy Potter	38.0		
	ADVANCED DIVISION (ages 13 and up)		
1. Winky Davis	28.1 sec.	1. Carolyn Haas	35.2 sec.
2. Jerry Ireland	31.0	2. Jacquie Webster	38.3
3. Barrie March	31.1	3. Cindy Guy	40.2
4. Bob Porter	31.3	4. Marcia Butman	42.4
5. Dave Faxon	33.1	5. Peggy Scannell	48.4

PHILIP A. DAVIS, JR.

CANOEING

Through the Eisenhower Lock by Canoe. Homer L. Dodge, who ran the Long Sault Rapids of the St. Lawrence River in an open canoe in October, 1956 (see APPALACHIA for June, 1957), maneuvered the first "pleasure craft" through the American locks of the Seaway at the official opening on July 4, 1958. The picture [see page 416] was taken in the Eisenhower Lock from the U. S. Coast Guard Cutter *Maple* which Dr. Dodge followed out of the lock. The two immense American locks, which will easily accommodate an ocean-going ship 730 feet long, with a beam of 75 feet, and drawing 25 feet of water, replace six small Canadian locks of the Cornwall Canal which formerly by-passed the rapids.

Navigation of this part of the St. Lawrence ceased on June 30, 1958. The "Great Inundation", as the Canadians called it, began with ceremonies on the Canadian side, on Dominion Day, July 1, the principal feature being the blowing out of a cofferdam at 8.00 a.m., which permitted the water to rise behind the more than half-mile long international powerhouse. Three days later the new Lake St. Lawrence had formed, replacing the Long Sault Rapids. On July 4 traffic was resumed through the two American locks near Massena, N. Y.

Lewis G. Castle, Administrator of the St. Lawrence Seaway Development Corporation, decided that Dr. Dodge was the most appropriate person to be the unofficial representative of those who use boats for pleasure rather than for commerce and to demonstrate that the turbulence in the locks is so slight that even a 15-foot canoe can be locked through with ease and safety.

Canoeing Accident on the Charles River. On the afternoon of Sunday, March 22, William D. Welch, 36, A.M.C. member from Brookline, Mass., lost his life in a canoeing accident on the Charles River. The tragedy occurred during a "flat water" practice session scheduled by the White-Water Canoeing Committee of the Club. This type of practice session is intended to introduce persons who are already familiar with the fundamentals of canoeing to basic white-water paddle strokes before exposing them to the technical obstacles encountered in rapids. The pond above the dam in Watertown has often been used for this purpose, having been considered a safe and convenient location. On the day in question, however, there was a strong downstream wind with even stronger gusts, plus a heavy volume of water going over the falls, the height of which is about three feet. The accident occurred shortly after the practice session had started and while the group, on order from the trip leader, was moving upstream to avoid the vicinity of the dam. The two experienced men in the group, plus most of the beginners, were still on the bank when a canoe, paddled by Welch and his wife, Elsie, was swept over the falls. The canoe passed over the lip of the dam nearly broadside, upsetting. The Welches struggled in the cold and turbulent water immediately below the falls. They had no life jackets. Mrs. Welch was swept free of the canoe and the falls and was carried downstream to a point from which she could be rescued. Welch stayed in the vicinity of the canoe at the foot of the falls. He eventually lost consciousness. The location at which the canoe went over the dam, plus geographical features of the area, made rescue very

difficult. In a rescue attempt made via the lip of the dam, the trip leader very nearly succeeded in bringing Welch out, but the operation was unsuccessful, and the trip leader was dragged from the water paralyzed by the cold. Welch was finally brought ashore by a passerby, Joseph P. Barnes of Watertown, who knew, from experience as a boy, that there was a bar of rocks and debris stretching across the river about five feet downstream from the falls. Unfortunately, this aid came too late. Welch died at about the time he was brought to a hospital. A severe bruise was found on his head.

The above represents only the basic facts of the accident. A fuller report, including recommendations, cannot be made at this time because the accident is still under study. However, this account should serve as a warning to groups or individuals engaging in canoeing to review safety practices, to examine training procedures from the viewpoint of safety, and to make a study of rescue techniques.

ELIOT DUBOIS

EXCURSIONS

Katahdin Excursion of the Portland Chapter, February 21-24, 1959. It is many years since an A.M.C.-sponsored expedition has been made to the wilderness of Baxter Park in winter.[1]

We were blessed with the best possible weather. Except for some snow squalls on Saturday that colored our walk from Togue Pond to Roaring Brook, and except for high winds Sunday, the weather was clear and cold for the entire four days.

There were twelve of us, including Ed Werler, the Park ranger, and his assistant, Ken Wetmore. There was one intrepid girl and one intrepid skier, not the same person. Anything that can be said about preparation on the part of the trip leader or the ranger in these few words would be gross understatements. The details would fill a book. The food and the ranger were flown in ahead of the party. We used the Roaring Brook bunkhouse as a base camp. As a result we were able to travel light and, just as important, we had a warm place and food waiting when we arrived at the camp.

The original plans called for us to ascend Baxter Peak on Sunday, but since high winds obscured the entire mountaintop with blowing snow we voted to postpone the ascent until Monday. We spent Sunday on local walks. A small group braved the frigid winds and climbed South Turner—which resulted in three frozen noses, the only casualties of the trip apart from the usual array of sore muscles and blisters.

Monday was a perfect day. The entire group climbed to Chimney Pond, taking pictures all the way. We were greeted and entertained at Chimney Pond by a couple of sociable and hungry "Whiskey Jacks" (Canada jays), who managed to con the group out of a substantial portion of their lunch. For various reasons, only five of the party ascended

[1] The first A.M.C. party to visit Katahdin in winter spent a week at Leroy Dudley's Chimney Pond cabin in March, 1926 (see APPALACHIA XVI, December 1926, 509-12); the second, a skiing party, entered in the spring of 1931 (APPALACHIA XVIII, June 1931, 250-6). There seems to be no record of any such party since that time.—ED.

Baxter Peak. The ascent was uneventful except for the unusually clear weather which gave the climbers excellent opportunities for pictures and enjoyment of the mountain at its best.

Tuesday brought with it the necessity of returning home. The trip ended with a feeling of accomplishment for all of us, and a sincere feeling of gratitude in our hearts for our good fortune in all respects.

R. W. McFarland

ACCIDENTS

Girl Lost on Speckled Mountain. Last August a group from a girls' camp spent the night at Cold River Campground. The next day the group climbed Speckled Mountain via the Bickford Brook Trail. Lunch was eaten on the summit and descent to the truck waiting at the Brickett Place was via the same trail.

The group arrived back at the girls' camp at about 6.00 p.m. and then made a count which showed that an 11-year-old girl was missing.

Immediately the alarm went out to the nearest National Forest Warden, the District Ranger, the State Police, the Inland Fish and Game Department and the County Sheriff. Search parties traveled throughout the night. An Inland Fish and Game Dept. plane was used the next morning and the girl was spotted from this plane about 9 a.m. She was about one mile northwest of the summit and was brought down off the mountain at about 11 a.m., none the worse for wear.

This was the first mountain hike for this 11-year-old girl. She said that the "fast hikers" started running down off the mountain—she thought running immediately after lunch was bad—so she sat down to wait for the "slow hikers". The "slow hikers" didn't appear, so she went back to the summit to "start down the right way". She wandered off the trail and got lost. She said that she wasn't frightened and the next morning sought open ledges where people in a search plane could see her.

N. D. Shirley, *District Ranger*

TRAILS

A new trail has been constructed in Franconia Notch, meeting a long-felt need in connecting Little Haystack Mountain with Lafayette Place. Falling Waters Trail was laid out by Clyde Smith, who makes trail signs for various organizations, including the A.M.C. and the New Hampshire Forestry and Recreation Commission, at his headquarters at the Flume, and was completed by volunteer labor. It leaves Lafayette Campground at the same spot as does the Old Bridle Path. For the most part it follows old logging roads, moving south to Walker Brook, crossing it below Stairs Falls, and continuing south to Dry Brook, which it then ascends on the south bank. Dry Brook is again crossed above Cloudland Fall. The trail then zigzags up a ravine to Shining Rock Cliff, 100 feet high, and turns north along its base to meet eventually the summit ridge of Little Haystack. The upper entrance is within a few feet of the summit. Side-trails are being planned to open up other falls not directly on the Falling Waters Trail.

Nancy W. Collin

DR. DODGE AND HIS 15-FOOT GRUMMAN CANOE

In the Eisenhower Lock

J. R. T. Molholm

ADELIE PENGUIN CHICKS MOULTING

(See page 404

Harold Orne

THE OCEAN SEEN FROM MOUNT WASHINGTON ON A CLEAR OCTOBER DAY

New England Trail Conference Report on Trail Conditions. Because the annual meeting of the Conference occurred after the publication deadline for the June APPALACHIA, the following trail report is based on material submitted to the secretary by various trail-maintenance organizations during February. Although the material received is therefore incomplete, it is hoped that this information regarding specific trails may be of value to walkers planning trips during the 1959 season.

The Maine Appalachian Trail Club reports most sections of the Appalachian Trail have received some clearing; and at the northern end 30 miles have been repainted—from Katahdin to Abol Bridge and from Rainbow Lake Dam to Mahar Campground. New board direction signs have been put up on the three relocations completed in 1957: the Penobscot West Branch area, from Blanchard to Moxie Pond, and the new trail over Bemis Mountain. The following areas received particular emphasis in trail clearing: from Cooper Brook Falls Lean-to to East Branch Tote Road Lean-to; the entire White Cap Mountain region from West Branch Ponds Road over the Mountain to Long Pond; parts of the Barren-Chairback Range; from Monson to Blanchard; over Pleasant Pond Mountain; from Avery Peak to Bigelow Village on the Bigelow Range; from Sugarloaf to Orbeton Stream and on to Saddleback Jr.; Section 22 from Maine Highway 5 to the Andover B-Hill Road; and the Frye Brook side of Baldpate Mountain.

Despite all this work the damage done by the heavy snows of the winter of 1957-58 is still evident in places, and the following areas are still in poor condition: the trail from Wadleigh Pond to Nahmakanta Lake, in the Little Wilson Stream area, is reported as badly obscured; four miles of trail from the top of Moxie Bald Mountain east toward Blanchard are still classed as closed; the trail over Bates Ridge near Pierce Pond is grown up with hardwood bushes; and two major side-trails, Gulf Hagas and the Bigelow Range, are both in extremely poor condition and considered as closed. The Maine Appalachian Trail Club aims to reclear the trail, however, so that its entire length in Maine can be classed as open and traversable in 1959.

In addition to trail work the Maine AT Club has been busy constructing lean-tos. In central Maine new lean-tos were built at Pleasant Pond Mountain, Joes Hole Brook, and Moxie Bald, and a fourth new lean-to at Wadleigh Pond was about half completed. During 1959 it is planned to finish the Wadleigh Pond lean-to and build another new lean-to at Hurd Brook Campsite, thus completing the chain of lean-tos in Maine.

The Phillips Exeter Academy Outing Club plans a May expedition to do extensive reconditioning on its trail on Mt. Tumbledown in Weld, Maine. The trail is reported to be in fair condition now.

In New Hampshire the Appalachian Mountain Club expects to continue its usual trail-maintenance program. Barring unusual winter damage to other trails, the following trails will be given additional attention: Sphinx, Osgood, Madison Gulf, upper Great Gulf, Franconia Ridge, Flume Slide, Webster-Jackson, Webster Cliff, Carter-Moriah, Carrigain Notch, Glen Boulder, Garfield Ridge, Lion Head, and Success. All shelters are in good condition generally except Zeacliff, which is in poor condition; its fate is uncertain at present.

The trails in the area of Randolph and Jefferson, N. H., maintained

by the Randolph Mountain Club, were all put in condition last year. Those in the Cold River Valley, maintained by the Chatham Trails Association, were all open at the end of the 1958 season except the Stone House Trail, which is to be cleared this July. The trail to Big Deer may be posted against travel this summer as the mine on its west slope may be reactivated this spring.

The Dartmouth Outing Club reports that in addition to the new shelter at Kinsman Notch, completed last spring, they plan to build one on Smarts Mountain in Lyme, N. H., and to work on some of their others. Their section of the Appalachian Trail, from the Bernard Gulf Road north of Woodstock, Vt., to Kinsman Notch northeast of Moosilauke, was cleared and reblazed last summer and is now completely marked with orange and black metal-and-paint blazes.

Most of the trails in the Sandwich Range maintained by the Wonalancet Out Door Club, are reported to be in good condition. The trail over the Wonalancet Range will probably be reopened this summer. The Mexico Ridge Trail on Mt. Paugus goes through a recently lumbered area and is little used, but it is clearly marked with blue paint. On Mt. Tripyramid the Club has been unable to reopen the Sleeper Trail from Whiteface and probably will not do so without volunteer help. Anyone who is prepared for very rough bushwhacking can get through the blowdowns on the First Sleeper, and from then on could probably follow the trail.

The trails around Squam Lake, N. H., are well marked and in good shape; the Squam Lake Association goes over them every year.

In Vermont the Green Mountain Club reports considerable work on the Long Trail and the other trails under its care. A new camp ½ mile farther into the woods to get away from the new road that connects the Jay Ski Area with Montgomery Center has been built to replace the old Jay Camp. A new open-front log shelter has been built on the same location to replace the old Whiteface Shelter. Both of these structures will go by their old names. The Thendara Shelter, which collapsed under heavy snow, has been replaced by another built on the same spot and named Deerview Shelter. Swezey Shelter has been completed. A boat has been located at the Bolton Crossing of the Winooski River; fare is 50¢ per person. The G.M.C. has approached Montreal's Youth Hostel Group to discuss the extension of the Long Trail from the Canada-Vermont border into the Sutton Mountains of Canada.

The Central Ranger District of the Green Mountain National Forest reports the Long Trail and Mad Tom Trail in fair condition; White Rocks Trail, which was relocated and reconstructed in May, 1958, is in excellent condition to the lookoff. The Long Trail from Route 140 south to Route 30 will be worked on this spring and summer, with waterbars improved, narrow sections widened, and signs repaired. The Northern Ranger District reports its trails in fair to good condition with the following exceptions: Clark Brook, New Boston, and Blood Root Mountain are in poor condition, and the Long Trail from Sherburne Pass to Carmel Camp is being torn up by private logging operations. As funds permit these poor conditions will be corrected, and all trails are scheduled for regular maintenance. The following shelters are reported in unsatisfactory to poor condition: Sunrise Camp, Sucker Brook Shelter, Lake Pleiad Camp, Boyce Shelter, Breadloaf Shelter, and

Cooley Glen; all are being considered for repair or reconstruction this year except Sunrise Camp, which may be removed.

The Appalachian Trail is reported in good condition throughout its whole length in Massachusetts. Last summer's relocation south of Dalton is well marked and a major relocation north of Dalton is planned for 1959. It should be noted that these relocations will not appear in the new edition of the *Guide to the Appalachian Trail in New England,* due this spring. Another relocation has been completed, moving the trail from a small blind ravine across the ridge top to a drier and much more scenic path along the western and eastern rocky rims of East Mountain.

All who walk the Appalachian Trail in Massachusetts will be pleased to hear that the Massachusetts Department of Natural Resources, in consultation with the N.E.T.C. and the Berkshire Trail Committee, is planning to construct Adirondack-type shelters along the AT at Sages Ravine, the AT junction with Elbow Trail on Mt. Everett, Upper Goose Pond, and four other places towards the New Hampshire line. These are scheduled to be completed by the summer of 1960. In addition to its shelter-building activities the Department of Natural Resources is investigating the present condition of existing trails in the state forests, and is developing additional ones.

Work on the Metacomet-Monadnock Trail has continued and it is reported to be in good to excellent condition. The trail has been measured from Connecticut northward, and a trail description in guidebook form will be ready for publication as soon as a suitable map can be prepared to accompany the text.

Most Connecticut trails are reported in good condition, although those around Storrs have been neglected lately because of lack of volunteer help, and a few other sections need attention. New trail signs have been placed at highway crossings. Since the last *Connecticut Walk Book* was published there have been some changes in the Narragansett Trail in Connecticut and also in the Norwich area. Because of continuing developments in trail work, it might be well to consult the section trails chairmen, listed in the *Walk Book,* before starting an extensive trip.

The Narragansett Chapter of the A.M.C. reports the Rhode Island trails in generally good condition. Main trails, the Narragansett and Interpark, are blazed with blue or yellow paint; side-trails are marked with white paint. A part of the Interpark Trail is dedicated to the late Ben Utter.

The Taconic Crest Trail, extending along the New York-Massachusetts border from Berry Pond to North Pownal, Vt., has been cleared and marked except for a small section in the center.

Maintaining trails which can be easily and safely followed through a wilderness area is a never-ending task, due both to the forces of nature and the equally destructive works of man in the form of lumbering, mining, road building, etc. The expense of such maintenance has become an ever-increasing problem; and if expenses continue to rise, adequate trail maintenance will become more and more the responsibility of those who use the footpaths. Several organizations have expressed a need for volunteers to help carry on their trail-maintenance responsibilities. Anyone who has ever been on a trail-work party can testify to what

a satisfying and enjoyable experience it is. The New England Trail Conference will be pleased to refer any willing volunteers to organizations which have requested assistance, with due regard for the exigencies of geography and time.

EDITH M. LIBBY, *Secretary, New England Trail Conference*
26 Bedford Terrace, Northampton, Massachusetts

WHITE MOUNTAIN QUIZ NO. 7

SPECIAL FEATURES

(Answers will be found on p. 440)

1. Upon what rivers, or the branches of what rivers, do the following waterfalls occur? a) Beede. b) Goodrich. c) Hawthorne. d) Hellgate. e) Paradise. f) Screw Auger. g) Thoreau. h) Weetamoo.
2. Pair off the waterwalls, in List A, with the brooks, in List B, upon which they occur.
   A. 1, 2) Bridal Veil (two cases). 3) Georgianna. 4) Giant. 5) Jackson. 6) Mossy. 7) No. 13. 8) Tama.
   B. 1) Cold. 2) Coppermine. 3) Franconia. 4) Harvard. 5) Peabody. 6) Raymond Cataract. 7) Snyder. 8) Wildcat.
3. Pair off the waterfalls, in List A, with the mountains, in List B, upon the slopes of which they lie.
   A. 1) Artist. 2) Champney. 3) Dryad. 4) Pleiades. 5, 6) Thompson (two cases). 7) Walker. 8) Welton.
   B. 1) Bald Cap Peak. 2) Cardigan. 3) Chocorua. 4) Lincoln. 5) Moat. 6) Moosilauke. 7) Peaked Mountain (Green Hills). 8) Wildcat.
4. Arrange in order of height the following four waterfalls, considering for this purpose only that part of each fall which consists of an unbroken, vertical plunge: Arethusa, Crystal Cascade, Glen Ellis, Ripley.
5. Upon what mountains do the following flumes lie? a) Butterwort. b) Chandler. c) Hitchcock. d) Kedron. e) Lary. f) Rattlesnake. (Note: Two of these lie upon the same mountain.)
6. Check the following Yes or No: There are small but well-known flumes in a) Carter Notch, b) Dixville Notch, c) the Albany Intervale, d) the Waterville Valley, e) on Mt. Kinsman, f) on North Twin. (Note: Three should be Yes, three No.)
7. Divide the following into two classes on a basis of mutual resemblance or common character: a) Agassiz Basin, b) The Bowls and Pitchers (Austin Brook), c) Diana's Baths, d) The Devil's Hopyard, e) The Ice Gulch, f) Mahoosuc Notch, g) The Sculptured Rocks (Cockermouth River), h) Upper Ammonoosuc Falls. (Note: The classes should be uneven.)
8. (a) About how high is the profile of the Old Man, from chin to forehead? 30–40–50–60–70 feet? (b) About how high is the entire profile above Profile Lake? 400–800–1200–1600–2000–2400–2800 feet? (c) Of how many different ledges, separated horizontally, is the profile composed?

9. On what mountains, or combinations of mountains, are the following profiles to be found? a) Indian Head, b) The Old Woman of the Mountains, c) Washington Lying in State.
10. Check the following Yes or No: Profiles of human faces or figures have been observed in the following notches, and remarked upon in print: a) Carrigain, b) Crawford, c) Dixville, d) Mahoosuc, e) Pinkham, f) Zealand. (Note: Three should be Yes, three No.)
11. (a) Name and locate, approximately, the largest boulder in the mountains. (b) Check the following Yes or No: There is a well-known so-called "balanced rock" 1) on Mt. Madison, 2) on Mt. Moriah, 3) on Ragged Mountain, 4) on the southern Kearsarge, 5) on Black Mountain (Benton Range), 6) on Mt. Percival (Squam Range), 7) near North Conway, 9) near North Woodstock. (Note: Four should be Yes, four No.) (c) Fill in the blanks in the following: There are noteworthy collections of boulders on the floors of _____ and _____ Ravines, in _____ Gulf, and in _____ Notch.
12. Beside what trails do the following named rocks lie? a) Bruin. b) Dingmaul. c) Dome. d) Roof. e) Split. f) Weetamoo.
13. (a) What are the two largest sets of caves in the mountains? (b) What cave, high on a cliff face and inaccessible by ordinary climbing, has been visited by descending from above on a 125-foot rope?

ROBERT L. M. UNDERHILL

ROADS, RAILROADS AND HOTELS

One Hundred Years of the Crawford House. The roaring flames no longer roared; they had done their work. The first hotel on the present Crawford House site was no more.[1] However, a group of Littleton men agreed to rebuild. In 1859 their new house was ready for guests, who came by stagecoach or carriage.[2] In 1872 started the Barron ownership that ended only in 1947, when the McCutcheon interests bought, placing Richard Edgerton in charge as managing director.

The original house was not the size of today's Crawford House. It consisted only of what is the present central part—the lobby, dining rooms and the rooms behind these two large spaces—together with the two stories above the main floor. The ballroom addition, the lesser wing towards the railroad track and the top story were added later, at various dates, by Asa and Oscar G. Barron.

A relic of the opening years is the big wrought-iron lantern now hanging under the roof of the motor entrance. Originally it hung in the main lobby. On its "floor" sat four kerosene lamps to light up the scene of crinoline ladies and bearded gentlemen, back in the era of the

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[1] This hotel, which was destroyed by fire, was built in about 1852 at the initiation of Thomas J. Crawford, proprietor of the older Notch House which stood a few hundred yards farther south. (See F. W. Kilbourne, *Chronicles of the White Mountains,* 162-3.)

[2] The Portland and Ogdensburg R. R. (now the Maine Central) was built through the Notch in 1875.

Civil War. Other surviving items are the present dining-room chairs. Built of seasoned wood by honest craftsmen, they have held up tons of humans while these over-stuffed themselves on the inclusive American-plan meals.

Up to a few years ago, many of the guest rooms had their original Victorian furniture, though Crawford House beds have long had Beauty Rest mattresses and such. Now the rooms all have new décor and modern furniture, together with baths and more baths.

To go back to sanitation in 1859. Then each room had its bowl, pitcher, slopjar and thunderjug, while somewhere to the rear were—shall we go modern and say, "the rest rooms"? A few tin tubs were installed in a series of cell-like rooms supplied with running hot water. This luxury was not to be indulged in lightly; all guest rooms had signs, "Guests desiring hot baths, apply to the maid for bathtowels, 25¢". As board was then $10 weekly it seems right to have made this charge for a hot-bath spree.

Croquet was the popular outdoor sport. Players felt quite athletic as they moved over the croquet lawns. Mountain climbing had its devotees, but in limited numbers, mostly men. Women generally considered climbing to Gibbs Falls, the top of Elephant Head, or to Merrill or Saco Ponds sufficient. Evening pastimes were cards, the stately round dances of the day, and the exchanging of travel experiences. People usually came for a week, or weeks. Family groups were numerous and the varied ages teamed up for many a pleasant hour. Dining-room tables seated ten, a sociable number.

So much for the fittings and ways of the early days. Now to the men who ran the hotel. The Littleton owners hired one or two tavern managers to run the house that they had built. After a dozen years they were glad to sell to Asa Barron of Vermont, who was aided by his brother Oscar F. (Oscar F. is not to be confused with his nephew Oscar G., who later ran the Fabyan House for many years.) The two older Barrons put all their talents and money into Crawford's, improving the house, the food and the services to the point where increasing numbers of guests allowed them to enlarge the plant to its present size. Their White Mountain interests increased until they owned or leased Twin Mountain House, the Fabyan House and the Summit House on Mt. Washington as well as Crawford's. Asa's sons—Oscar G., William A., and Hal—together with Dean Merrill were the resident managers in these popular houses over a span of seventy-odd years. With Asa's death his assistant, Dean Merrill, became Crawford's genial host until his death in 1906, when Colonel William A. Barron, the son of Asa, took over. His capable guidance brought it to the peak of Crawford's fame as one of the top New England resorts. Under his management and with the aid of his gracious wife, Crawford's was the summer mecca of a wonderful group of guests, who came year after year.

The Crawford tennis courts established the White Mountain annual tennis tournament many years ago with the sanction of the National Tennis Association. Music in the Barron era was not just hotel music, it was high-grade chamber music by members of the Boston Symphony Orchestra. The ballroom was made lovely by guests in summer dinner clothes. The Notch Room was gay with the informal groups. Saddle horses pranced up to the side entrance. The garage had sleek chauffeured

cars awaiting their owners' commands. Such were the luxury scenes, in the first third of the twentieth century.

Modern demands have not passed the Crawford House by. In recent years three cottages and an attractive motel have been built on the east lawn. Chauffeur-driven cars are a rarity. The summer musicians are a dance group. Square dancers step it up on the ballroom floor. No more passenger trains pass by. Cars and bus service bring the guests. But Crawford's still is the mecca of thousands of vacationers. Richard Edgerton's folders tell of Crawford's as a high-grade complete resort. The mountains look down on its roof now as in 1859. Come 1959 summer the same hospitable door will swing open to welcome you and to celebrate Crawford's hundredth birthday.

FLORENCE MOREY

Proposed State Ownership of the Summit of Mt. Washington. On October 16, 1958, the Mt. Washington Study Committee, organized late in 1955 by Governor Dwinell of New Hampshire in order to consider the advisability of State acquisition of the summit of Mt. Washington and accessory properties, transmitted their report to the Governor. The report summarizes the history of Mt. Washington in all its aspects (including the legal and economic ones), considers the uses for which the mountain is peculiarly adapted, and comes to the following conclusion: "We unanimously recommend acquisition by the State of the summit, the carriage road and the cog railway. . . . We believe that the summit is an invaluable asset to the people of the State. Furthermore, we believe that the revenue potential is sufficient to justify an investment by the State, with due consideration given to such additional funds as would subsequently be required for needed improvements and changes, to the end that even greater beneficial results would accrue to the area and the State as a whole."

In listing the uses for which the mountain is peculiarly adapted the report mentions its importance as a weather station and its commercial value for broadcasting purposes, and then goes on to say: "Perhaps the mountain's recreational use is of the most immediate and direct interest to the people of New Hampshire. It has been so used now for a century and a half and is visited yearly by thousands, some climbing on skis during the spring and early summer months or on foot during the summer and fall, over the network of paths maintained by the Appalachian [Mountain] Club and the Forest Service, others in stages and still others by the cog railway. These visitors come from all over this country and from foreign countries as well and there can be no doubt that they have an impact upon the economy of the State, particularly in the White Mountain area." To determine this impact the Committee employed the Bureau of Business Research of the College of Business Administration of Boston University to conduct a survey, which was duly made in 1956, and some of the results of which are given below. There are also scientific and educational uses. Dartmouth College (the present owner of most of the summit) wishes to retain space for a laboratory, Mt. Washington being considered the best place in eastern North America for some branches of research, such as polar studies. The testing programs established by the Army, Navy and Air Force are mentioned. And a new scientific organization, SIPRE, which will carry

out experiments in the study of snow, ice and permafrost, may find its nearest natural laboratory on Mt. Washington.

The Boston University survey brought out, among others, the following interesting facts. Some 150,000 persons visit the summit each year. (Elsewhere it appears that the majority arrive by the cog railway.) Mt. Washington is the "most impressive" attraction in New Hampshire to 44%; the Flume, to 18%; Lost River, to 13%; the Aerial Tramway, to 12%; and Lake Winnipesaukee, to 10%. Yet of every 100 parties visiting the Base Station, 75 do not go to the summit. Reasons: time is a factor to 28%; price, to 26%; sightseers, "just looking", make up 18%; fear of the railway or the height of the summit deter 9%. "These reasons lead to the conclusion that if the trip on the railway were speeded up and the price lowered, the volume of traffic to the summit would easily be doubled."

Furthermore, 54% of those who did visit the summit were critical of conditions there, 27% complained about the cog railway, and 13% expressed themselves as "completely dissatisfied". Typical complaints were: of the railway, that it was too slow, uncomfortable, dirty, noisy, too costly, with inadequate guides and unkempt personnel. Of the refreshment stand and dining room at the summit, that there was inadequate space, a limited selection of food, poor service, cold food, poor atmosphere. Of the summit hotel, that it was too expensive for value received, that the rooms were old and dirty, that there was blaring television until late hours, nothing to do after sunset but watch television, too dismal. Of the summit surroundings, that there were poor observation and walking facilities, no telescopes, no wind shelters for photographers, no guides. On the other hand, there were many glowing comments from summit visitors who were satisfied. (Also, the Governor's Committee remark that "the present management has been doing what it could with the small means available to make the surroundings more acceptable".)

Commenting on the need to modernize the cog railway in order to meet the criticisms voiced above, the Boston University survey report remarks: "To contend that the cog railroad has the only steam engine in the country, that it is one of the few cog railroads left in the world, that it is evidence of past engineering genius, or that it is a trademark of the White Mountains, does not mean that more people will want to ride it. Rather it may mean that they want to see it, in which case the engine and cars could be preserved perhaps in a Base Station museum."[1] (To this the Governor's Committee add: "Col. Arthur Teague estimates that for an expenditure of $50,000 to $60,000 the rails could be double-tracked between Waumbek Station and the Halfway Shelter. This would eliminate delays now caused by putting trains on sidings, to permit other trains to pass. . . . Perhaps any radical improvement of the

[1] The usual advertisements of the cog railway as the first of its kind ever to be built in the world naturally do not go on to state that unfortunately this railway has remained practically in its pristine condition, whereas the Swiss cog railways, which were originally modeled upon it, have been vastly improved with the years. They use a modified form of double cog, which gives a smoother pull; they have one and all been electrified, thus doing away with the unpleasant reciprocating action of the steam engine; and their speed has been doubled or even tripled.—Ed.

Miriam Underhill

ZEALAND FALLS HUT, WINTER ENTRANCE

March 18, 1959. (See page 410)

Dick Smith, North Conway, N. H.

SUMMIT OF MOUNT WASHINGTON

present facility is impractical. . . . Col. Teague has advised the Committee, after conference with Monorail, Inc., that it would cost three million dollars to install a single-rail device. . . .")

As a possible line of development for the summit the Boston University survey report suggests that a staff of alpine-uniformed escorts should be trained to conduct guided tours, or be stationed at strategic points about the summit to describe the various landmarks, history, geology, etc., of the White Mountain area; that the summit house itself should be renovated and enlarged to provide better dining-room and refreshment facilities, one hundred modern hotel rooms, an exhibition-foyer hall large enough to accommodate 150-200 persons, and an observatory pavilion on its roof; that a boardwalk-observatory completely encircling this new summit house should be constructed, with ample seating provided; that windbreaks or stands should be placed at appropriate points for photographers and sightseers, with identification devices, including telescopes; that an evening program of events should be developed for overnight guests, including such things as movies, dances, games, and lectures and fireside chats on the White Mountains; and that there should be established a brief ritual initiating every summit visitor into the Mt. Washington "Summiteers". Also recommended is that the government buildings should be opened to the public, where possible, with guided tours to describe the activities being carried on.

The Governor's Committee, in explaining their recommendation that the summit, cog railway and carriage road be acquired by the State, say: "It is our considered opinion that only by State control can conditions be made entirely pleasing on the top of the highest peak in the northeast and the only one accessible to the public generally by highway and railway. We believe that by State control the various uses to which the summit is now put, which today to some extent interfere with one another, can be co-ordinated and each made to supplement the others with advantage to all, and with benefit to the economy of the State by vastly improving the mountain as a tourist attraction. At present five interests, representing a reported investment of $15,000,000, have the use of the top of Mt. Washington: recreation, education, military, scientific and research, commercial (TV). At one time, a few years ago, seventeen different agencies were located at or near the summit. Only by public ownership can a recurrence of the confusion that then existed be avoided."

The practical situation is that Dartmouth College has offered to sell to the State either its properties on the summit alone, or these together with the cog railway. No offer for the sale of the carriage road had been made at the time of the report, but the Committee had been informed by the owners that they were willing to sell to the State.

CONSERVATION

New State Park in Maine. Through the generosity of the Scott Paper Company, the State of Maine has acquired land for a new state park. The tract of land, consisting of 570 acres, is situated just south of Lily Bay on Moosehead Lake and includes Rowell Cove as well as Mathews Cove. Although there are no mountains in the area, the proposed park will be useful as a base camp for persons intending to climb in that

region. No name has been chosen for the new park but probably it will be called the Lily Bay State Park, since other areas on the lake may be developed as parks in the future. Facilities will not be ready until the summer of 1960, since title to the land was acquired on December 29, 1958.

CHARLES B. FOBES

Youth Conservation Corps. Those who remember how much the C.C.C. did for the White Mountains during the depression will be particularly interested in a bill filed by Blatnik in the House and by Humphrey and nineteen co-sponsors in the Senate to authorize the establishment of a Youth Conservation Corps. Under the Youth Conservation Commission in the Department of Health, Education and Welfare, the corps is to provide healthful outdoor training and employment for young men and to advance the conservation, development and management of national resources of timber, soil and range, and of recreational areas. Subsistence, clothing, medical care, transportation and education are to be provided and pay similar to that in the army for a maximum of 150,000, at least 85 percent of whom must be between the ages of 16 and 22.

MARJORIE HURD, *Chairman, Conservation Committee*

NATIONAL PARKS AND MONUMENTS

New Proposals. Not only by the increasing hordes of their visitors is the expanding interest in national parks shown, but even more markedly by the numerous proposals for new parks and monuments distributed from coast to coast. Here is a brief description of those that have received substantial backing. An asterisk indicates approval by the Club. (Others, however desirable, are felt not to come within the scope of the Club's interest.)

Minute Man National Historical Park in Lincoln, Lexington and Concord is planned to preserve the area where the Revolution started on April 18-19, 1775. It is not to exceed 750 acres.

*Cape Cod National Seashore, of 30,000 acres, will feature the Great Outer Beach in the six towns from Provincetown to Chatham. See below.

Chesapeake and Ohio National Park will protect the 4800 acres of Federally-owned land situated along the C. & O. Canal above the Great Falls of the Potomac. A total of 15,000 acres may be acquired.

Indiana Dunes National Monument covers some 3,500-5,000 acres of scenic and biologically important terrain on the south shore of Lake Michigan.

Ice Age National Park (formerly Moraine National Park), in thirty-four Wisconsin counties, shows outstanding features of continental glaciation. The Secretary of the Interior with the local government is to determine the area.

*Great Basin Range National Park, the region around Wheeler Peak in Nevada, exhibits a striking variety of life zones, with spectacular scenery.

Dinosaur National Park offers greater protection to Echo Park than

the present Monument. (Conservationists look askance at the clause in Senator Allott's bill providing for investigations of "the suitability of reservoir and canal sites".)

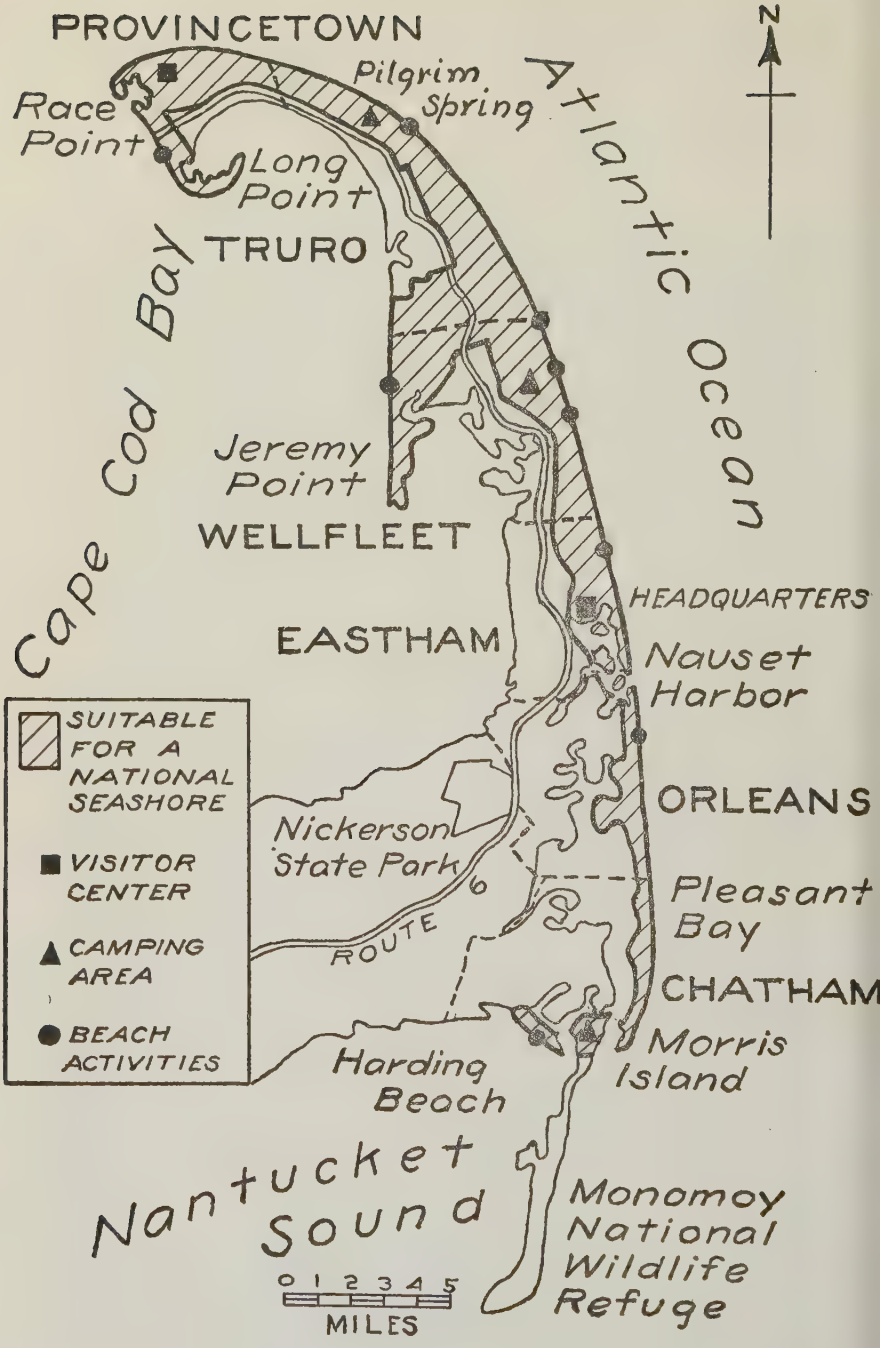
*Northern Cascades National Park in the north of the state of Washington, is a region of superb mountains, streams and forests now threatened by lumbering.

MARJORIE HURD, *Chairman, Conservation Committee*

Cape Cod National Seashore. For months (almost years) I'd been hearing about a national park on Cape Cod, so last September I took the chance of a few days' holiday to see for myself. Christine Reid joined me and, armed with maps and nebulous plans, we set forth on our investigation. Our first stop was to call on Malcolm Hobbs in Orleans. Glad to learn of the A.M.C.'s approval of the idea, the enthusiastically pro-park editor of the *Cape Codder* was most cordial and informative.

A well-furnished cabin in Truro gave us headquarters. Our two-day jaunt convinced us of the fascination of the region, and rendered the report of the Park Service advocating the proposal, which appeared in March, far more meaningful. Since the area proposed for a park, or National Seashore as it is now being called, is nearly 30,000 acres and extends some forty miles from Race Point in Provincetown to the southern tip of Nauset Beach and includes nearby Morris Island and Harding Beach in Chatham, we could but sample it. Through the forests and dunes of the Province Lands (a state park), which cover all but the very village of Provincetown, we had previously roamed and had admired the sands and vast ocean views from the eminence of the Race Point Coast Guard Station; for the southern part of the Seashore, a beach-buggy would have been needed. So our explorations started at Pilgrim Spring, near Pilgrim Lake in North Truro, and worked southward, following each east-trending "hollow" that gave access to the Great Outer Beach, unquestionably the outstanding feature of the region. These hollows are not stream valleys but depressions left by the retreating ice-sheet, for Cape Cod is a great moraine later worked upon by wind and ocean currents. From the cut in the seacliff a scramble leads to the beach; there may be a small parking place, but no facilities seem to be provided by the town or private owner for picnicking or bathing. We wandered on beach and upland, loafed a bit, and then went on to the next viewpoint. These same access spots are planned by the Seashore for development—parking, dressing rooms, sanitation. "Private Beach" and "No Trespassing" signs we encountered all too frequently on the approaches and on the cliff margins which offer spectacular trails 50 to 175 feet above the ocean, whence there are entrancing vistas of tawny sands stretching along the shore lapped by waters of ever-changing aspect.

Inland from the beach in Truro, and especially in Wellfleet, are numerous kettle-hole ponds surrounded by luxuriant mixed hardwoods. We delighted in some of the larger ones, but many could be gained only by tracks that looked too narrow and sandy to tempt us. (Enticed by the name, we ventured a few miles on the Old Kings Highway but were relieved to regain the blacktop.) These ponds drain westward


PROVINCETOWN
Race Point
Pilgrim Spring
Long Point
TRURO
Cape Cod Bay
Atlantic Ocean
N
Jeremy Point
WELLFLEET
HEADQUARTERS
EASTHAM
Nauset Harbor
SUITABLE FOR A NATIONAL SEASHORE
VISITOR CENTER
CAMPING AREA
BEACH ACTIVITIES
ORLEANS
Nickerson State Park
Pleasant Bay
ROUTE 6
CHATHAM
Morris Island
Harding Beach
Nantucket Sound
Monomoy National Wildlife Refuge
0 1 2 3 4 5
MILES

through the Pamet and Herring Rivers, whose marshes attract many birds and other wildlife. West of the woodland are rolling, open moors stretching to Cape Cod Bay. Wisely the National Park Service Proposal takes in this terrain.

Since its quiet and spaciousness are the paramount charms of the region, it is reassuring to note that the Park Service plans call for a minimum of development: two visitor centers, three camping areas, nine locations for beach activities with varied facilities, all of which are to be kept as simple as possible. Considerable tracts will be left roadless, with trails and possible bicycle paths only. The Proposal quotes the duty of the Park Service under the law to "conserve the scenery and the natural and historic objects and the wildlife therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations", and quite evidently intends to proceed accordingly. Provision is made for recreational activities, but preservation of the scene is the primary approach. There are to be no major concessions within the Seashore; private enterprise in adjoining communities will be relied on to supply meals, lodging and services.

Although the Pilgrims first landed here and in 1644 made a permanent settlement at Nauset, the territory included in the Seashore proposal is surprisingly vacant, a sparse scattering of small houses and camps on the shore and occasional homes inland. But in many places we found layout for subdivisions and the threat of private and exclusive ownership. With the improvement of roads more pleasure-seekers will undoubtedly come to the Cape, which is within a day's drive of one-third of the nation's population. That the qualities they look for be not destroyed, that the natural attraction of beach, cliffs, dunes, moors, ponds and forest be preserved, national protection seems needed. Massachusetts authorities have declared it too big a job for the State to handle; they are heartily in favor of the National Seashore and promise to turn over all State holdings to it. Therefore bills have been introduced in Congress calling for a National Park (or Seashore) on Cape Cod. Referred to the Committee on Interior and Insular Affairs, hearings on them should be held soon. Opposition can be expected from homeowners (who, however, will doubtless be allowed life tenancy) and real estate developers, but there seems, even locally, to be much favorable sentiment and the idea meets with enthusiasm throughout New England. We can hope for enabling action by Congress, and then the real effort will come to raise funds to purchase the necessary lands.

Having had a grand outing and viewed much of the territory, we unreservedly agree that the Great Outer Beach and adjacent terrain meet the criterion for areas to be included within the National Park System, that it indeed has "national significance—scenic, scientific, or historical stature so great, so precious as to make its preservation the concern of all Americans".

MARJORIE HURD, *Chairman, Conservation Committee*

News from the White Mountain National Forest. Herbert E. Adams, Staff Assistant to the Forest Supervisor, has been promoted and

transferred to the Regional Office of the U.S.F.S. at Upper Darby, Penna., where he will be responsible for forest-fire-danger measurements and other related technical aspects of forest-fire control in the seven national forests of the fourteen eastern states.

His successor at Laconia is Elmer H. Kelso, who will be in charge of timber management, wildlife and watershed management. He was formerly District Ranger at Plymouth, N. H.

Camping in the W.M.N.F. continues to increase in popularity. Despite unfavorable weather during the first part of the summer of 1958, the total use of the twelve national forest roadside campgrounds was heavy. While the F.S. seeks to operate recreational areas so that users are as free from regulation as possible, growing demands for space in the campgrounds are forcing certain restrictions in order that more people may use them. Consequently a limit on the length of time that campers may continuously occupy a campsite was imposed last summer at three of the W.M.N.F. campgrounds—White Ledge and Dugway Campgrounds near Conway, and Dolly Copp near Gorham. While it brought about a drastic change in the vacation plans of some campers, accustomed to stay on for extended periods, results last summer indicate that it was for the best interests of the general camping public.

The South Pond Bathing and Picnicking Area will open for public use this summer. A two-mile access road, 100-car parking area, bathhouse, bathing beach and 30 picnic spots with tables and fireplaces have been constructed, and the area is serviced by a complete water system drawing pure water from a deep well. While eventually provision may be made for boats, no boat landing or boat-trailer ramp will be available this summer.

The Sugarloaf Campground, located one-half mile from the Zealand Campground on the road towards Zealand Notch, was opened last summer and received heavy use. It offers 21 individual family campsites and several newly designed facilities, including a self-registration system. The area may be expanded eventually to accommodate 35 family units.

An Adirondack shelter was constructed at Sawyer Pond, bringing the total number of trailside shelters and cabins maintained in the back country by the Forest Service to 24. Sawyer Pond is one of the most beautiful ponds in the National Forest. A recent fish survey of the pond revealed that greater fishing pressure would be beneficial. Heavy natural reproduction of trout creates too much competition for the available food. A reduction in the fish population through more fishing would result in satisfactory numbers of larger trout.

Construction of an access road and a seven-unit campground at Crocker Pond in Albany, Maine, is now underway. This will be of interest primarily to hunters and fishermen. However, the campground will afford camping among natural surroundings on a small scenic body of water and should be popular also among those seeking a secluded camp spot.

Plans have been approved for a 29-unit campground near the covered bridge on the Dugway Road within one-half mile of the Kancamagus Highway in Passaconaway. This is scheduled for completion sometime in 1960.

A major relocation of the Piper Trail that leads from Route 16 to the top of Mt. Chocorua has been undertaken. In 1957 a new Adirondack shelter was built beside this trail high on the mountain and the Jim Liberty cabin on the southeast side of the peak was rebuilt.

Last fall the Tuckerman Ravine Trail, from the highway in Pinkham Notch, was renovated. A small rock crusher was used to break up rocks to make a smoother tread, and three bridges were replaced. This trail has been improved for foot travel and as a tractor road for servicing the A.M.C.-operated Tuckerman Ravine Shelter as well as the new ski patrol headquarters. Jeep travel over the road will not be permitted.

The target date for completion of the 1.2-mile gap at the height of land on the Kancamagus Highway is August 1, 1959. It is expected that additional Forest Highway funds will become available to complete all betterment work of the highway in 1961 or 1962.

Forest-fire damage was held at a low level again in 1958. Fewer than five acres were burned in the ten fires which occurred. With the development of successful methods for dumping water mixed with fire-retardant chemicals from planes onto forest fires, the F.S. has assigned a plane for this purpose to its Eastern Region. It will be available to the W.M.N.F. as well as to the New England states on request. Other uses of aircraft in fire-control work are also planned for this season. A system of dropping supplies to men on the fire line will be expanded. Cargo parachutes have been obtained. Greater use will be made of plane patrol for fire detection during high-fire-danger weather. This patrol will supplement the fire detection service now rendered by mountain lookouts.

A new radio network has been established in the National Forest. It uses high frequency radio waves which travel only in straight lines. A repeater station has been installed on Mt. Washington. Thus communication is provided between points which are in sight of the mountain top but not of each other. Present two-way equipment includes office sets, vehicle sets, sets in lookout towers and light-weight portables.

GERALD S. WHEELER, *Forest Supervisor*
White Mountain National Forest

PERSONAL ITEMS

Herbert L. Malcolm, who for 22 years held the A.M.C. hut-system walk record, died on January 23, 1959. Born in Melbourne, Australia, in 1884, the son of an American businessman with interests in the Orient, Herbert Malcolm did not settle in the United States until he was ten years old. He graduated from Yale University *cum laude* in 1907, having paid his own way. This he did mainly by tutoring, for which he had great ability. Not unnaturally, he became a teacher of Latin, for one year, and then owner and headmaster of the Lake Placid-Florida School, a school for boys with classes in Lake Placid in the fall and spring and in Cocoanut Grove, Florida, in the winter. He maintained this school for seventeen years, and sold it in 1925. The school's winter quarters had been moved to Pompano Beach in 1923 and remained his property. He transformed them into the Hillsboro

Club and changed from teacher to hotel manager in a sudden decision.

In 1944 he bought the Waumbek Hotel in Jefferson, N. H., and transformed it in the next years into one of the best-appointed hostelries in the White Mountains. A third venture was started in 1950: Pink Sands on Harbor Island in the Bahamas, now another flourishing winter resort.

He enjoyed sports greatly. He coached baseball, basketball, handball in high school, college and later. And walking as a sport interested him more and more, so much so that he achieved a number of remarkable things in it. In the Adirondacks he joined the Forty-Sixers, a group of people who have climbed all forty-six Adirondack peaks of more than 4000 feet. Long before the advent of the Four-Thousand-Footer Club he mentioned such a project for the White Mountains. When he settled in Randolph, he climbed much in the White Mountains and found out that his powers of endurance could be trained to a truly amazing extent. At the age of 51 he made his famous hut-system run, going from Carter Notch Hut to Lonesome Lake, touching every hut and every summit on the way, all of 55 miles, in 21 hours and 43 minutes.[1] For the long span of twenty-two years his record stood unchallenged. Keeping in trim during the winter by running 10 miles a day on the sands of Florida and climbing the 136-foot lighthouse in lieu of mountains, he went far and wide in his all-consuming love for the high places. In his fifties he tackled the peaks of the High Sierra; in his sixties Popocatepetl and Orizaba; at the age of 69, the Matterhorn. He joined the A.M.C. in 1931, and was a member of many other mountain clubs.

I knew him well during the years when he was president of the Randolph Mountain Club. Then he was active in many capacities. He helped clear trails and repair camps, build bridges and lay stonework. He was a demon of energy who liked nothing better than to take a thing which was in a bad way and put it on its feet. He could also organize the best camping trips; wherever he was, there was good cheer. I admired him most of all when I saw him in the company of some particularly slow and infirm walker. Then he would help him—or her—over every stone and muddy spot, rest every few minutes, and never by word or motion betray the slightest impatience, or let the poor creature suspect that he could, if he wanted to, go a little faster.

KLAUS GOETZE

CORPORATIONS

The German publishing house of F. Bruckmann, in Munich, passed the hundredth anniversary of its founding on November 15, 1958. This firm is a prominent publisher, among many other things, of finely illustrated books on mountaineering and of the leading periodical *Der Bergsteiger,* to which we are frequently indebted for items of great interest. We offer our congratulations upon the completion of this long period of useful activity.

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[1] See APPALACHIA XXI (December, 1936), 189-194.

MONTALBANIANA

Down the Carriage Road on Bicycles. We left the summit half an hour before sunset, calculating to ride the eight miles to the base before dark and to spend the night at a farmhouse in the Notch. We rode pneumatic safeties of the best make, but they were unprovided with brakes. The result was that, when the grade became, as it did at times, steep, our wheels attained an absolutely uncontrollable momentum. At such times the only thing we could do was to steer for the first heap of sand or clump of huckleberry bushes that hove in sight and sail into it with our eyes shut tight and head down. After one such charge, which had been a particularly severe one, I found the Professor half buried under a log and snarled up among the roots of a bush so that he could not move one arm with freedom. This situation did not, however, interfere with a successful transfer of huckleberries from the branches to his stomach.

Thus we proceeded on our extraordinary way, and I doubt not that The Old Man in the Mountains grinned sardonically as he took note of the Professor's apparel, which after every charge became more and more "promiscuous", until it dwindled into shreds. When within a mile of our destination our wheels again began to get beyond our control, but we were so near the foot that we decided not to try to stop them. So down we flew at a fearful rate, when at the end of a long curve we saw ahead in the dim light two four-horse mountain wagons passing each other and taking up the entire road. Neither of us said a word, but slid off our wheels, and were hurled through the bushes down the twenty-foot gravel embankment and through the trees down the steep mountain slope. Meanwhile the bicycles were running riot. The Professor's went over the embankment and flew along with increasing momentum until, with a hop, skip and a jump, and a farewell somersault, it disappeared over the ledge and we saw it no more. The Professor himself was badly stunned, but we brought him to, going down in the wagon, and beyond a couple of tender ankles, a lame shoulder, and various cuts and bruises, he arrived at the base in, as he expressed it, "pretty fair form".

PERCY C. STUART, in *Outing*, August, 1895.

LETTERS FROM OUR READERS

Katahdin in 1865. APPALACHIA for December was extremely interesting to me, especially "A Trip to Katahdin in 1865" since as a young man I knew many of the people mentioned; others I had heard of. Uncle John Ellis was known as "Hunter Ellis" and had quite a reputation as a guide, hunter and trapper. I heard my grandfather tell about him many times. H. G. O. Barrows was a relative of my grandmother. Zeb Mitchell I never saw but I think I knew his brother Oscar. Louis Gill was for many years a local liquor dealer and was an uncle to my step-grandmother. He was very powerful, and as an old man, probably 80, he would sit in the barber-shop chair, apparently asleep. When the barber would attempt to turn his head the other way, the old guy would

set his neck and the barber, even with both hands, could not turn it, much to the amusement of the usual barber-shop loafers, of whom I was one. Simon Wakefield or Old Sabattus was Stephen Wakefield. There is a picture of him in the town office here. Jack Falstaff I never heard of but Tim Meservey lived to be an old old man and many of his offspring are still here.

HARRY SANDERS, JR. (aged 69), *Greenville, Moosehead Lake, Maine*

August Camp. The last issue of APPALACHIA with pictures of the August camps really brought back memories. You probably did not know it, but the little boy in the white shirt back of the left edge of the smoke in that 1910 picture was me. There were three of us youngsters waiting on table that year—Stan Duffill, myself and I believe the other fellow's name was Bonney.

We three and two guides—Bickford was one—were up there a week ahead of the opening of camp. We spent the first night at the Halfway House sleeping on tent bags with no blankets. I can still remember how the countless tent pegs protruded at most uncomfortable spots. It would have been smoother on the ground outside, but it was quite cold.

The next day the two cook stoves had to be "de-elevated" from the Halfway House into the Great Gulf. That sure was a steep trail. And the day we broke camp Phoebe Ropes either sprained or broke an ankle and had to be "elevated" over the same trail on a stretcher.

One night as we went to bed it was thundering off in the east, and I remember remarking that if that storm blew into the Gulf and there was not enough wind to push it over the headwall we were in for a good storm. Never did I guess more correctly. The thunder and lightning were still a-rip-roaring after noon the next day. Some of us started for the summit of Washington via the Carriage Road and at the Horn one could hold up his hand and watch the static sparks off the ends of his fingers. Believe me, we moved out of there fast.

On another trip the party was caught at Madison Hut in a storm that lasted two-and-a-half days. They decided to wait out the storm before going back to the Great Gulf. As there was not enough food at the hut, the guide and two of us waiters were elected to the job of going down to the Ravine House to secure some. There was a telephone to the Ravine House at that time, so the order was telephoned, to be ready when we reached there. We all started down wearing raincoats but soon deciding it was better to be wet with good clean rain than with perspiration, we left the coats on top of brush along the trail.

When we reached the Ravine House we were really dripping, so did not go in—just handed in the rucksacks and told them to pack them. The order telephoned had been rather small and we had figured on making a fast trip back. But when we saw the filled rucksacks we just looked at each other in amazement. They weighed about 45 pounds each. (Another order had been telephoned after we left.)

The return trip was mostly after dark. I had no dry clothes so spent the rest of the evening dressed in women's attire.

Boy! We really had fun in those days!!

STANLEY M. BANFIELD

BOOK REVIEWS

The Bernese Oberland. By Sir Arnold Lunn. London: Eyre & Spottiswoode, 1958. 202 pages, 15 modern photographs and reproductions of old prints, profile map, index. 25 shillings.

I suppose most if not all mountain-lovers hold some region as an inner talisman to which in quiet moments they return and against which they measure others. Certainly Sir Arnold Lunn so holds, and rightly for him, the Bernese Oberland. In this book, actually published on his 70th birthday, he tries to show the Oberland to others in such a way that they may find there some of what he has found.

The book is not primarily reminiscent; it is really about the Oberland itself. This means that early history (even derivations of place names), first ascents, anecdotes of famous climbers and guides, poets' visits with suitable quotations, are found side by side with descriptions of terrain, climbs, ski runs, walks, as they are today. Two kinds of people will enjoy the book: those who have already been to the Oberland and care for it; those who have not been there but may be going. Sir Arnold himself says: "This book will have achieved the main purpose for which it was written if it persuades some . . . to pay their first visit to the loveliest of all conceivable mountain regions. It will have achieved its secondary purpose if it proves to be a helpful travel companion to lovers of the Oberland, for it is as a travel companion that I would wish this book to be judged."

So judged, it is found good.

ANNA E. HOLMAN

The Mountain World, 1958-59. Edited for the Swiss Foundation for Alpine Research by Othmar Gurtner and Marcel Kurz. English version edited by Malcolm Barnes. Printed in Switzerland. New York: Harper and Brothers, 1958. 208 pages, 52 pages of pictures (many of them double spreads and fold-outs), maps and sketches. $6.00.

By any standards this, the 12th edition of *The Mountain World* (the 5th in English), is fine literature. The illustrations, always a feature of prior editions, are better than ever. Like its predecessors, this book deserves widening recognition in the brotherhood of mountain lovers.

The volume is composed of sixteen chapters by fifteen different authors. Five are devoted to the ever busy and increasingly known Himalaya: "Gasherbrum II", by Fritz Moravec; "Broad Peak and Chogolisa", with a first-hand account of the death of the legendary Hermann Buhl, by Kurt Diemberger; "Bara Shigri", by Frances Delaney; "Machapuchare", by Wilfred Noyce; and two chapters on Manaslu by Yuko Maki and Toshio Imanishi. Three concern the newly discovered fascination of the South American Andean country: "Nevado Jirishhanca and El Toro", by Dr. Heinrich Klier; "In the Cordillera Blanca and Vilcanota", by Gunter Hauser; and "Huagaruncho", by Michael Westmacott. Three involve new knowledge of such North American stalwarts as the Mexican volcanoes of Ixtaccihuatl, Popocatapetl and Orizaba, also Mts. Rainier and Logan. Ulrich Mann shows the reader a different atmosphere on famed Olympus, and the noted Swiss

glaciologist Dr. Fritz Muller makes the geology of the Khumbu Glacier of Mt. Everest come alive.

The first two chapters deserve special mention for the efforts devoted to them by the authors and editors. These concern mountains that have become household words in recent decades, Mont Blanc and the Eiger. From these two chapters one gains new and specific insight into the tragedies that have occurred thereon and the ofttimes fanatical philosophies that have encouraged them, as well as deep respect for heroic rescues and united efforts toward mountain safety by responsible climbers on the continent.

The Mountain World 1958-59 takes its readers to the high ridges. They never return to the valley and seldom glimpse even the cols. It is the monarch of current mountaineering literature.

C. F. Belcher

The Springs of Adventure. By Wilfrid Noyce. London: John Murray, 1958. xii, 240 pages including index, 21 illustrations. 18 shillings.

That age-old question, why men climb, or explore, or dive, or do any one of the many things which may seem bizarre to the stay-at-home, has never been satisfactorily answered, probably because there are so many answers, none of which seems adequate to the so-called "average mind" that asks the question. In this book Wilfrid Noyce tries to bring together some of these answers, partly through his own expository writing and partly through quotations from many and varied sources.

The variegated aspects of the problem are well handled although, it might be complained, in such profusion that only a blur remains. No attempt is made to smooth each facet as it appears or to relate it to the whole. In fact, the more one reads, the more multifarious the problem appears, making quite apparent the illogicalness of logic as applied to this question.

The book should be required reading for those inclined to give a trite and quick answer to this perennial question, while those who wish to delve more deeply will find much food for thought.

K. A. Henderson

The Merrimack. By Raymond P. Holden. Illustrated by Aaron Kessler. New York and Toronto: Rinehart & Co., Inc., and Clarke, Irwin & Company, Ltd., 1958. 306 pages, including 8 pages of bibliography, 10 pages of index, an excellent 2-page map, and 23 untitled drawings. $5.00. (The fifty-third volume of the Rivers of America series.)

This is a readable and comprehensive history of the Merrimack River, of the people who have lived in its watershed, and of their life from the earliest times until today. After touching briefly on the river's geological and prehistoric background, the book takes us upstream with the first explorers and colonists from Plum Island Sound and Old Newbury to the confluence of the Pemigewasset and the Winnipesaukee at Warren Daniell's barn in Franklin, and then on to the headwaters in Franconia Notch and Lake Winnipesaukee, with interesting side-excursions up some of the river's other tributaries and on occasion further afield.

In this book we share the struggles and fears of the settlers and later inhabitants of the Merrimack Valley, their religious and political disagreements, their sufferings from Indian raids (high-lighted by Lovewell's fights and by Hannah Dustin's daring vengeance), their witchcraft delusions, their part in the Revolutionary War, and the development of their farming, fishing, shipbuilding and canals, followed by the era of the railroad and of industrial manufacturing. On the river and its tributaries, once teeming with shad and salmon, we see the growth of populous cities—Newburyport, Haverhill, Lowell, Lawrence, Nashua, Manchester and the two Concords. We enter into the lives of John Stark, Count Rumford, Daniel Webster, John Greenleaf Whittier, Ralph Waldo Emerson, Henry David Thoreau, Lucy Larcom, Francis Cabot Lowell, Amos and Abbott Lawrence, Franklin Pierce, Mary Baker Eddy, Robert Frost and others, all of whom live again in Mr. Holden's interesting book. *The Merrimack* (with the *k* permanently restored since about 1915 by the Bureau of Geographic Names, despite the ravages of the Confederate ram in the 1860's) belongs on the shelves of all lovers of New England.

WILLIAM PLUMER FOWLER

Mountain Search and Rescue Operations. Prepared by the Division of Ranger Activities of Grand Teton National Park. Published by the Natural History Associations of Grand Teton, Yellowstone, Glacier, Rocky Mountain, Grand Canyon, Zion and Bryce National Parks (from whom available), 1958. 87 pages, 16 sketches. $1.00.

This paperbound booklet is a basic handbook for protection personnel. In general, the information is presented in two parts, the first dealing with mountain-rescue operations for both technical and nontechnical terrain, the second with mountain and wilderness search operations. Both sections discuss in some detail planning, organization, the training of personnel, and the carrying out of required search and rescue operations. Clear, illustrated descriptions are given of techniques and the use of necessary equipment, especially that required for technical operations.

As few works have been published on this subject, this booklet brings together much material that has been previously obscure. It is clearly written and complete in scope. The detailed outlines of search and rescue organization and operation are well presented, with discussion indicating the requirements for completeness of preparation. It is apparent that much time and effort have been expended, in preparing this booklet, by men who have had much experience in this field. It should be required reading for all who are involved in mountain and wilderness search and rescue operations.

JOHN C. PERRY

The New Official Austrian Ski System. Edited by the Austrian Association of Professional Ski Teachers. (English edition translated by Roland Palmedo.) New York: A. S. Barnes and Co., 1958. 126 pages, 72 plates and illustrations. $5.00.

This book is a landmark in the professional literature of ski technique.

It is the official instruction manual of the Austrian Association of Professional Ski Teachers, designed to standardize ski-teaching methods throughout Austria. It is not a beginner's handbook or a how-to-do-it kit. As a professional manual it is detailed, concentrated, hard reading, but reading well worth the trouble for anyone interested in modern ski technique. Its many excellent illustrations are not intended to be inspirational but instructional.

The significance of the book lies in its full synthesis of the many new currents of ski technique which have developed since World War II, and in the marked departures, now officially adopted, from the pre-war Arlberg teaching system.

The new emphasis is on "leg and hip action": all turns start with the side-slip of the skis, rather than from body rotation, the hallmark of the pre-war Austrian technique. Indeed, any too-pronounced body rotation is found to be a handicap to high-speed technique, and long drills in the basic snowplow turns are avoided for this reason. The objective of the system is the high-speed "swing", not the tightly controlled "turn" of former years. The reason for this change in emphasis lies, not solely in the demands of modern racing technique, but more importantly in the requirements of the average pleasure skier, whose skiing is increasingly conditioned by lifts and the hard-packed *piste*.

A notable feature of the book is a perceptive introduction by Stefan Kruckenhauser, in which he outlines the development of alpine skiing from the deep-snow Arlberg technique of the late 1920's, through the perfecting changes wrought by the steel edge and increased speeds in the 1930's, and on to the post-war variations of parallel skiing, *ruades* and *wedeln* of recent years.

It should be emphasized that this book is an instructor's manual, and is not designed for cursory reading. But from a study of its instructional methods there emerges a full picture of a carefully integrated modern ski technique, and with it suggested answers to the old-timer who wonders where the stem turn has gone; to the newcomer who is lost in the unnecessary debate between parallel and stem; and to the amateur ski instructor (be he parent or leader of a club trip) who hopes some day to graduate his pupils from the confining vise of the double-stem.

DONALD G. ALLEN

BRIEFLY NOTED

Listening Point. By Sigurd F. Olson. New York: Alfred A. Knopf, 1958. 243 pages, 28 black-and-white drawings. $4.50.

A book that, because, for one individual, it goes so deep into the experiences and meanings gathered around "a bare glaciated spit of rock in the Quetico-Superior country", will set any reader to reaching back in his own memories around his own focal spot—though few can reach as deep as this author. Mr. Olson has been president of the National Parks Association since 1954, is a well-known plant and animal ecologist (now wilderness ecologist to the Izaak Walton League of America), and the author of *The Singing Wilderness*. The warm satisfaction that the book communicates is based on acute perception and precise knowledge. In a chapter, "The Sound of Rain", he says: "The drops

soak into the ground as they should, stopped by an intricate baffle system of leaves and pine needles, small sticks and bits of bark, the partly decayed vegetation just underneath, and finally the humus itself, rich, black, and absorbent, the accumulation of ten thousand years."

The drawings by Francis Lee Jaques, the type and paging, keep to the spirit of the writing.

Rain and the Feast of the Stars. By Reiko Hatsumi. Boston: Houghton Mifflin Co., 1959. 215 pages, many skillful line decorations. $3.50.

A delightful and unusual book by a young Japanese woman, included in this column because of one chapter, "Etsu and the Snow Woman". Here the author, as a child, experiences without understanding (but makes the reader understand) the struggle between the old order and the new. Her brother, the oldest son, moves contrary to his father's wish, defies all tradition, in order to go "to the mountains". "It hardly seems an occupation worthy of a gentleman to walk about aimlessly under a heavy load", observed Father. . . . "There is something captivating about high mountains", said my brother. "I feel freer—I can breathe better."

Guide to the Appalachian Trail in New England. Covering the AT in Connecticut, Massachusetts, Vermont and New Hampshire. Published by the Appalachian Trail Conference, Inc., 1916 Sunderland Place N.W., Washington, D. C. Fourth Edition, 1959. $3.50.

Uniform in style of presentation and method of binding with the other well-known volumes of this series. A great improvement in this edition is the inclusion of a detailed description, with exact measurements to hundredths of a mile, of the route of the trail through the Green Mountains and White Mountains, so that the user of the AT now has all the information he needs for these sections within the covers of one book.

(There are a few errors: we note "Mt. Hope" for Mt. Hale, and an obsolete description of the route of the Gulfside Trail on the summit of Mt. Washington. Also, we must protest against the improper addition of the word "Trail" to the names of the Twinway, Air Line, Osgood Cut-Off and Old Jackson Road, and against the practice of referring to all intersecting trails of the AT, however important, as merely "side trails".)

History of the Connecticut Chapter, A.M.C. By a Committee of the Chapter, Norman Wickstrand, Chairman. Published by the Chapter, [1958]. 60 pp.

The Connecticut Chapter was founded in 1921, and a history of its first seventeen years published in 1938; this history has now been brought up to date. It covers in a very impressive fashion the many activities of the Chapter: annual meetings, dinners and lectures; excursions of different types, including rock climbing, skiing and white-water canoeing; trail work, and the development of Bantam Camp and the Mt. Riga Project. Interesting and stimulating reading for all members of the Club.

The Art of Living Out of Doors in Maine. Published by the Maine Camp Directors Association, Third edition, 1957. 159 pages. $1.75.

A useful pamphlet for those who wish to train young people in wilderness ways. This is the program for the Pre-Junior and Junior Maine Guides, officially created by an act "of the State of Maine Legislature in March 1937". Carefully thought out; clearly presented in detailed outline form. Though intended for groups working toward a certificate, it offers much to parents for their own children.

Camping and Outdoor Cooking. By Rae Oetting and Mabel Otis Robison. Minneapolis: T. S. Denison & Co., 1958. 259 pages, many photographs and color cartoons. $4.95.

If you really need help in outdoor eating you can find it here. Is it venison, trout, *et al.*, you do not know how to prepare—after you get them? Is it a four-man, nine-day trip you wish to plan for? A backyard barbecue? Or a hamper picnic? Recipes, cooking directions, preparing tricks, utensils, all are here in a very attractive layout. Too heavy to take with you, however, so look it over early and get your mouth to watering.

Answers to White Mountain Quiz No. 7

1. a) Bearcamp. b) Ellis. c) Branch of Gale. d) Dead Diamond. e) Lost. f) Bear. g) North Fork of Pemigewasset East Branch. h) Peabody, West Branch.
2. A1–B2. A2–B6. A3–B4. A4–B5. A5–B8. A6–B1. A7–B3. A8–B7.
3. A1–B7. A2–B3. A3–B1. A4–B6. A5–B5. A6–B8. A7–B4. A8–B2.
4. Arethusa (130 ft.), Ripley (110 ft.), Glen Ellis (60 ft.), Crystal Cascade (50 ft.). The first three measured by barometer, the last estimated, owing to difficulty of access.
5. a) Willard. b) South Baldface. c) Willard. d) Willey. e) Success. f) Blueberry.
6. b), d), e)—Yes. a), c), f)—No.
7. Class 1: a), b), c), g), h). Class 2: d), e), f).
8. (a) 40. (b) 1200. (c) Three, as ordinarily counted, but more exactly, five. See APPALACHIA XVI (February, 1926) 301.
9. a) Mt. Pemigewasset. b) Eagle Cliff. c) Franconia Ridge, Liberty to Haystack.
10. b), c), d)—Yes. a), e), f)—No.
11. (a) The Madison Boulder, N.W. of Madison, off Route 113 between Madison and Conway. (b) 2), 3), 5), 9)—Yes. 1), 4), 6), 7)—No. (c) Huntington and King Ravines, Jefferson Gulf, Carter Notch.
12. a) Watson Path. b) Gulfside Trail. c) Inlook Trail. d) Castle Ravine Trail. e) Boott Spur Trail. f) Weetamoo Trail (Chocorua).
13. (a) Lost River Caves; Polar Caverns (Plymouth). (b) The Devil's Den, on Mt. Willard.

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